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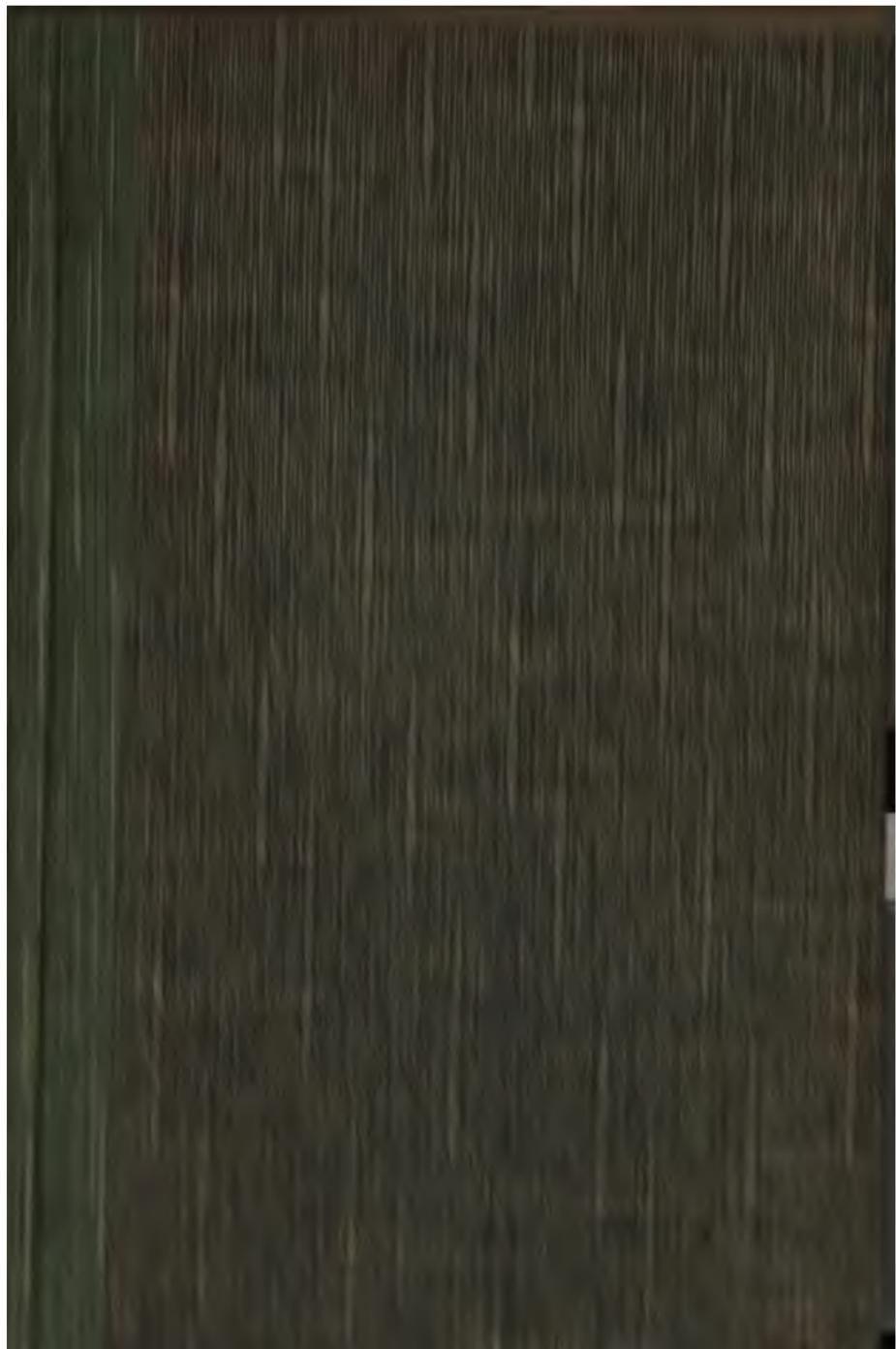
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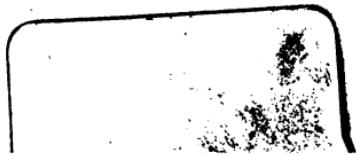
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AIDS
TO
THERAPEUTICS
AND
MATERIA MEDICA.

SPECIALLY DESIGNED FOR
STUDENTS AND JUNIOR PRACTITIONERS.

PART I.—THE NON-METALLIC AND METALLIC
ELEMENTS.
LICHENOLIC AND ETHEREAL PREPARATIONS, &c.

BY

C. H. ARMAND SEMPLE,

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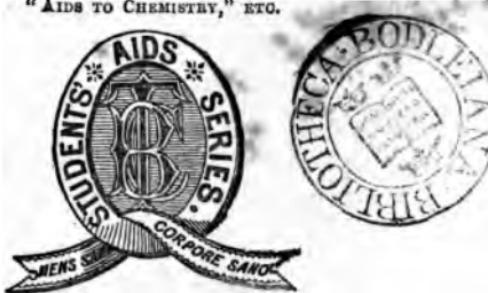
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THE NON-METALLIC AND METALLIC ELEMENTS.

OXYGEN.		HYDROGEN.		NITROGEN.		CARBON.
CHLORINE.	|	BROMINE.	|	IODINE.		
SULPHUR.	|	PHOSPHORUS.	|	ARSENICUM.	|	BORON.
POTASSIUM.	|	SODIUM.	|	LITHIUM.	|	AMMONIUM.
		CALCIUM.	|			BARIUM.
				ALUMINIUM.		
MAGNESIUM.	|	ZINCUM.			|	CADMIUM.
		MANGANESEIUM.	|			FERRUM.
ANTIMONIUM.	|	BISMUTHUM.	|			PLUMBUM.
CUPRUM.	|	HYDRARGYRUM.	|			ARGENTUM.
		AURUM.	|			CERIUM.

ALCOHOLIC AND ETHEREAL PREPARATIONS, ETC.

Alcohol. Cerevisiae Fermentum. Æther. Æther Purus.
Chloroformum. Alcohol Amylicum. Amyl Nitris. Chloral
Hydras. Creosotum.

Acidum Carbolicum. Acidum Aceticum. Acidum Citricum
Acidum Oxalicum. Acidum Tartaricum. Acidum Benzoicum.
Acidum Tannicum. Acidum Gallicum.



AIDS TO THERAPEUTICS AND MATERIA MEDICA.

OXYGEN. O - 16.

THIS gas is obtained by heating the red oxide of mercury, and by various other methods.

Therapeutics.—A solution of oxygen in water has been used as a slight stimulant and excitant. Although great advantages were anticipated from its introduction as a remedial agent, these anticipations have not been confirmed by clinical experience. Inhalation of the gas has been tried in certain conditions of the system associated with deficient aeration of the blood, but has not as yet been attended with much success.

HYDROGEN. H - 1.

This gas is obtained by the action of sulphuric acid upon certain metals, as zinc, iron, etc.

Therapeutics.—Is of little value as a remedial agent; when mixed with a certain quantity of oxygen and breathed, a peculiar shrill and sharp tone is imparted to the voice. A flame of hydrogen has been used as a cautery to form issues, but it is not otherwise employed therapeutically.

WATER. H₂O - 18.

This substance should be free from taste, odour, and visible impurity.

The water in common use is derived from springs, rivers, and rain-fall. Rain-water, if collected before it touches the

earth, is very pure and soft ; but should it fall upon limestone or chalky districts it becomes impregnated with sulphate and carbonate of lime, and occasionally with the salts of magnesia.

The purity of spring and river water entirely depends upon the soil out of which it rises, or through which it passes. Spring-water is often rendered "hard" from its containing insoluble compounds of lime.

Purification.—The chief methods for purifying common water are the following :

(a) *Subsidence.*—The water is left at complete rest, so that the suspended impurities may gradually subside.

(b) *Ebullition.*—By this means vegetable and animal vitality is destroyed, air and carbonic anhydride are expelled, and carbonate of lime is precipitated.

(c) *Distillation.*—This is the most effectual method, when properly conducted ; but distilled water frequently contains traces of organic matter.

(d) *Filtration.*—This process renders water clear and transparent. The substances used for the filtration of water are charcoal (both vegetable and animal ; the latter is the more effective), perforated plates of metal, flannel, cloth, sponge, porous stone, and beds of sand. Paper is made use of only in operations on a small scale. There are two kinds of filtering-paper—the coarse, for the separation of the grosser particles ; the fine, for removing finely-divided matter.

MINERAL WATERS.

These are divided into four classes :—(1) *Chalybeate or Ferruginous waters.* These contain iron in the form of carbonate and sulphate. Carbonate of iron occurs in the waters of Pyrmont, Spa, Schwalbach, Tunbridge Wells, and Harrogate. Sulphate of iron exists in the waters of Sand Rock, Isle of Wight, Brighton, etc. *Therapeutically*, these chalybeate waters are useful in conditions of anaemia and debility ; they should be avoided by plethoric persons. (2) *Acidulous or Carbonated waters.* These contain much carbonic acid, giving slight acidity and causing sparkling. Their chief salts are carbonate of lime, carbonate of soda, and carbonate of magnesia, with excess of carbonic acid. The chief of these waters are those of Carlsbad, Seltzer, and Ilkestone, near Nottingham. *Therapeutically*, they are useful in atonic dyspepsia ; they increase the secretion of the kidneys and skin, and are of value in gout, rheumatism, and some calcu-

lous affections. (3) *Saline waters.* These may be subdivided into (a) *Purging saline waters*, as those of Cheltenham, Leamington, Purton, Seidlitz, Pöllna, and Friedrichshall bitter waters. They chiefly contain sulphates of magnesia and soda. (b) *Calcareous waters*, as those of Buxton, Bath, and Bristol, principally containing carbonate and sulphate of lime. (c) *Salt waters*, as those of Wiesbaden, Baden-Baden, and Kreutznach, containing chiefly chlorides, the last, considerable quantities of iodine and bromine. (d) *Alkaline waters*, as of Vichy and Ems, notable for the large amount of alkaline carbonates contained. *Therapeutically*, these are useful in congestion of the portal system. They are powerfully stimulant and alterative, and (d) are indicated in an acid condition of the urine. (4) *Sulphuretted or hepatic waters*, contain sulphuretted hydrogen in solution, and are known by their odour. These are found principally at Harrogate, Moffat, Cheltenham, Aix-la-Chapelle, Borcel, and Aix in Savoy. *Therapeutically*, they are stimulants, especially to the skin and uterine system, and are much used in skin diseases of a chronic character.

Therapeutics.—Water is used both hot and cold; as ice, and as aqueous vapour.

Cold drinks were given by the ancients in *ardent fever*, and in modern times have been thus used. The affusion of cold water has been found of benefit in epilepsy, hysteria, and fainting, and its internal administration will sometimes alleviate gastric pain, spasm, and hiccough. Large draughts of this fluid have caused the expulsion of intestinal worms.

Injections of cold water are thrown into the *rectum* to arrest haemorrhage, expel worms, and relieve pains in haemorrhoids; into the *vagina* to arrest uterine haemorrhage.

The *cold bath* is employed to obtain a nervous impression, *shock*, and subsequent glow, with the object of increasing the tone and vigour of the body. In pregnancy and in diseases of the heart it is a dangerous remedy, as also in persons disposed to apoplexy, and in those in whom it is succeeded for a long period by coldness of surface, blueness of lips, feeble pulse, and headache. The *temperature* of this bath ranges from 1°C to about 23.8°C (33°F to about 75°F); when below 10°C (50°F) it is deemed very cold.

Perfusio, or *cold affusion*, has been recommended in some affections of the head. This term implies the pouring of cold water from a greater or less height upon the head of the patient.

The *temperature* should be between 0°C and $13\cdot3^{\circ}\text{C}$ (32°F and 60°F). This form of application is advantageous in syncope ; in prussic acid, alcohol, and opium poisoning ; in asphyxia from inhalation of carbonic acid, sulphuretted hydrogen, etc., and in the *convulsive fits* of children.

The *Impluvium*, or shower-bath, is similar to, though milder than, affusion. In insanity, it is of the greatest benefit in allaying mental excitement. Cold or tepid *washes* may be used in febrile diseases with the best effect, and what is called *water-dressing* may be said to be an improved form of poultice. This is used in the form of two or three layers of lint dipped in water and applied to inflamed parts, wounds, and ulcers, the whole being covered with oiled silk. *Ice* is used externally to check haemorrhage, especially in operations for piles and fistula ; it has also been found of service in restraining sanguineous discharges from the uterus. The *ice-cap* (made by placing pounded ice in a bladder) is applied to the head in inflammation of the brain ; in acute hydrocephalus, apoplexy, and mania with much mental excitement. Friction with ice and snow has been applied to *frost-bitten* parts. Internally we make use of ice to relieve cardialgia and vomiting, and to check gastric, nasal, bronchial, and uterine haemorrhage ; the constriction of the vessels being effected through the sympathetic relations of the stomach with other organs.

Tepid, Warm, or Hot Water Baths.—The temperature of the *tepid bath* ranges from $29\cdot4^{\circ}\text{C}$ to $33\cdot3^{\circ}\text{C}$ (85°F to 92°F) ; that of the *warm bath* from $33\cdot3^{\circ}\text{C}$ to $36\cdot6^{\circ}\text{C}$ (92°F to 98°F). The latter is of service in the anasarca of scarlatina, and of chronic renal disease, and has been employed as a relaxant for the reduction of dislocations, and in herniae. It is of the greatest advantage in promoting the passage of urinary or biliary calculi. The temperature of the *hot bath* is from $36\cdot6^{\circ}\text{C}$ to $44\cdot4^{\circ}\text{C}$ (98°F to 112°F). This is principally employed in paralysis, rheumatism, and some other chronic diseases. *Warm fomentations* are frequently made use of to allay inflammation, and to relieve pain, tension, and spasm. *Internally*, tepid or warm water is taken into the stomach to promote vomiting ; to induce diaphoresis in rheumatism, gout, etc. It is injected into the *rectum* to excite evacuation ; into the *vagina* to allay uterine pain and irritation, and to promote the lochia ; into the *bladder* to relieve vesical irritation, and for distension of the organ previous to lithotomy.

The *vapour bath* is powerfully stimulant and sudorific. It is very useful for the production of profuse sweating, and is employed in chronic rheumatism, gout, anasarca from Bright's

disease, and in chronic skin diseases. It is also of service in uterine affections, as chlorosis and amenorrhœa.

The inhalation of *warm aqueous vapour* is of great benefit in inflammation of the tonsils, in the sore-throat of scarlatina, and in laryngitis.

Officinal Preparation.—**AQUA DESTILLATA.** Ten gallons of water are distilled from a copper still, connected with a block-tin worm. The first half-gallon is rejected, and the next 8 gallons are preserved.

AQUÆ, Waters, are saturated aqueous solutions of essential oils, obtained by distilling fresh or dried vegetables, or their essential oils, with water.

INFUSA, Infusions, are aqueous solutions of certain constituents of vegetable substances, obtained *without* the aid of ebullition. The substance, sliced, bruised, or coarsely powdered, is digested with distilled water, either hot or cold. Cold water is used if the active principle be very volatile, and when it is desirable to avoid the solution of a substance soluble in hot water. In making the infusions of quassia or calumba, cold water is preferred, because this does not take up the starchy matter. Infusions are preferred to decoctions when the active principle is volatilized by a boiling heat, as in the case of orange-peel and buchu, or when ebullition produces some chemical change, as in the case of senna.

DECOCTA, Decoctions, are aqueous solutions of certain constituents of organic substances obtained *with* the aid of ebullition.

LIQUORES, Solutions, consist of substances dissolved in water.

MUCILAGINES, Mucilages, consist in the suspension in water of amylaceous or gummy substances.

MISTURÆ, Mixtures, are chiefly aqueous preparations having earthy salts or other substances suspended by sugar or gum. In the scammony mixture, the resin is suspended by *milk*.

SYRUPÆ, Syrups, are infusions of organic or inorganic bodies saturated with sugar.

NITROGEN. N - 14.

This gas is prepared by burning phosphorus in a jar of air, etc.

Therapeutically.—Nitrogen has rarely or never been used in the free state.

AMMONIA. NH₃.

Ammoniacal gas is prepared from gas liquor, hydrochloric acid and slaked lime.

Therapeutics.—Strong liquor ammoniæ is used in the following modes :

(1) As a stimulant and sudorific in typhoid fever, and the exanthemata ; or expectorant in pneumonia, and in chronic bronchitis.

(2) As a nervine stimulant and antispasmodic ; in poisoning by digitalis, tobacco, and hydrocyanic acid. The vapour of ammonia may be inhaled in syncope, or to ward off an attack of epilepsy.

(3) As a remedy for the bites of poisonous animals.

(4) As an antacid in dyspepsia, and in poisoning by the mineral acids.

(5) As a local irritant ; employed as a rubefacient, vesicant, and occasionally as a caustic.

Administration.—The dose of the strong solution of ammonia is from 3 to 10 minims, well diluted, but the weaker solution is in more general use, and is given in doses from 5 to 30 minims, properly diluted.

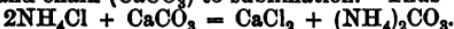
The chief compounds of ammonia used in medicine are the following :

(1) *Ammoniæ Liquor Fortior*, ammoniacal gas (NH_3) dissolved in H_2O and constituting 32·5 per cent. of the solution.

The ordinary liquor ammoniæ consists of ammoniacal gas (NH_3) dissolved in water in the following proportions, viz.: 1 pint of strong solution of ammonia to 2 pints of distilled water.

The preparations in which liquor ammoniæ fortior is used are : *Ammoniæ phosphas* ; *Linimentum camphoræ compositum* ; *Liquor ammoniæ* ; *Liquor ammoniæ citratis* ; *Spiritus ammoniæ aromaticus* ; *Spiritus ammoniæ fætidus*, and *Tinctura opii ammoniata*.

(2) *Ammoniæ Carbonas* ($(\text{NH}_4)_2\text{CO}_3$), carbonate of ammonia, prepared by submitting chloride of ammonium (NH_4Cl) and chalk (CaCO_3) to sublimation. Thus—



This salt is used in doses of from 5 to 10 grains, as a stimulant and diaphoretic. In doses of 30 grains as an emetic. It is often employed for preparing *effervescing draughts*, of which the following is a formula :

20 grains of carbonate { 6 fluid drachms of lemon juice, or
of ammonia require { 24 grains of crystallised citric acid, or
25½ grains of crystallised tartaric acid.

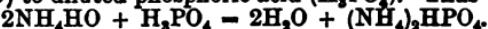
The preparations in which ammoniæ carbonas is used are : *Liquor ammoniæ acetatis*, and *Spiritus ammoniæ aromaticus*.

(3) *Ammonii Chloridum* (NH_4Cl), chloride of ammonium,

is obtained from gas liquor, or by neutralising hydrochloric acid with ammonia and evaporating to dryness. It is sometimes used in this country, and in Germany is regarded as a powerful alterative, stimulant to the absorbents, and resolvent of indurations. It is said to be a sedative in neuralgia. The dose is 5 to 30 grains every two or three hours. A mixture of 5 parts of this salt with an equal quantity of nitrate of potash and 16 parts of water forms a *freezing mixture*, which has been used as an *ice-poultice* for hernial tumours.

The preparations in which ammonii chloridum is used are : *Liquor hydrargyri perchloridi* and *Liquor ammoniae fortior*.

(4) *Ammoniae Phosphas* ($(\text{NH}_4)_2\text{HPO}_4$), phosphate of ammonia, is made by adding a strong solution of ammonia (NH_4HO) to diluted phosphoric acid (H_3PO_4). Thus—



This salt is said to be capable of dissolving urate of soda, and to be valuable in the treatment of urinary diseases where there is a tendency to the uric acid calculus. It is given in doses of 5 to 20 grains.

(5) *Ammoniae Benzoas* ($\text{NH}_4\text{C}_7\text{H}_5\text{O}_2$), benzoate of ammonia, is prepared by adding together a solution of ammonia (NH_4HO), benzoic acid ($\text{HC}_7\text{H}_5\text{O}_2$) and distilled water. Thus—



This drug is converted in the body into hippuric acid, and as such is found in the urine. It is employed in chronic inflammation of the bladder, and in an alkaline condition of the urine, or when there is a deposit of phosphates. The dose is 10 to 20 grains.

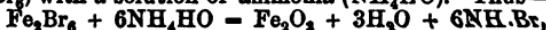
(6) *Ammoniae Acetas* ($\text{NH}_4\text{C}_2\text{H}_3\text{O}_2$), acetate of ammonia, given in the form of liquor ammoniae acetatis, is prepared by acting upon carbonate of ammonia ($(\text{NH}_4)_2\text{CO}_3$) by acetic acid ($\text{HC}_2\text{H}_3\text{O}_2$). Thus—



Water, carbonic acid, and acetate of ammonia are formed.

It increases the secretions, especially of the skin, and is largely used in febrile conditions as a diaphoretic and refrigerant. In large doses it is also stated to relieve dysmenorrhœa. The dose of the liquor is 2 fluid drachms to 6 fluid drachms freely diluted.

(7) *Ammonii Bromidum* (NH_4Br), bromide of ammonium, is obtained by decomposing a solution of bromide of iron (Fe_2Br_6) with a solution of ammonia (NH_4HO). Thus—



Ferric oxide, water, and bromide of ammonium are formed. This salt has been given in the same cases for which bromide of potassium has been used. It possesses all the powers of bromine. The dose is 2 to 20 grains.

NITROUS OXIDE. N₂O.

Laughing Gas.

This gas is prepared by heating the nitrate of ammonia.

Therapeutics.—Is much employed as an anæsthetic, especially for minor operations, as teeth extraction, etc.

Respiration of this gas is not usually followed by depression, or other unpleasant symptom. It occasionally excites violent muscular action, and care must be taken that the gas is pure, especially that the ammonium nitrate be free from chloride; the salt should not be heated too strongly, in case the nitrous oxide be rendered irritating from fumes of ammonium nitrate and the irrespirable products of decomposition. The gas is inhaled from a waterproof cloth bag, which should contain four or five litres, and is furnished with a wooden nozzle. It is safer than chloroform, but its action is not so prolonged.

NITRIC ACID. HNO₃.

This acid is prepared by the action of sulphuric acid upon nitrate of potash or nitrate of soda.

In medicine nitric acid is used as follows:

(1) *Acidum Nitricum (aqua fortis).*—This contains 70 per cent. by weight of nitric acid (HNO₃) corresponding to 60 per cent. of nitric anhydride (N₂O₅).

(2) *Acidum Nitricum Dilutum*, dilute nitric acid, contains of nitric acid 6 fluid ounces, of water 24 fluid ounces, or 1 part of HNO₃ in 5 of the diluted acid.

(3) *Acidum Nitro-Hydrochloricum Dilutum*, dilute nitro-hydrochloric acid. Nitric acid 3 fluid ounces, hydrochloric acid 4 fluid ounces, distilled water 25 fluid ounces.

Therapeutics.—*Externally*, the strong acid is applied to phagedenic sores, to warts, and to haemorrhoids. Diluted, it has been used as an application to ulcers, and in cancrum oris. It has proved efficacious in dissolving phosphatic calculi when injected in a dilute state into the bladder.

Internally, the dilute acid is refrigerant and tonic. It is very useful in some forms of dyspepsia by giving tone to the stomach, and in liver affections it appears to have consider-

able influence. It is also given as an alterative in some cutaneous affections.

Diluted nitro-hydrochloric acid is similar in its action to solution of chlorine. It is used as a stomachic in dyspepsia, and also as a solvent of phosphatic deposits in the urine. For chronic hepatitis it has much repute; it is often used externally as a foot-bath.

Dose.—Of strong nitric acid, 1 minim to 3 minims freely diluted; of the diluted, 10 minims to 20 minims; of diluted nitro-hydrochloric acid, 5 minims to 15 minims well diluted. As a bath, 6 fluid ounces to the gallon of water (in a wooden vessel).

Adulterations.—Chiefly sulphuric and hydrochloric acids, which may be detected by the tests for these substances.

CARBON. C - 12.

Officinal Preparation.—**CATAPLASMA CARBONIS**, charcoal poultice; prepared from wood charcoal in powder, bread, linseed meal and boiling water.

Therapeutics.—Wood charcoal is employed internally as an antiseptic and corrector of acidity, and flatus. Externally it is used as a dentifrice, and as a poultice for fetid ulcers. Internally it is given, recently prepared, in doses from one teaspoonful to one tablespoonful. It is sometimes made into biscuits, and has occasionally been given in the form of lozenges.

CARBO ANIMALIS, animal charcoal, or bone-black, is the powdered residue of sheep and ox bones after exposure to a red heat in the absence of air. It is prepared by submitting bone-black to the action of hydrochloric acid for two days at a moderate heat, in order to remove the salts, and subsequently heating to redness. It is a black inodorous pulverulent substance, almost tasteless, possessing the power of absorbing odours and gases, and therefore much employed for the purification of water. It is used in the preparation of *Carbo animalis purificatus*.

Therapeutics.—Used in a similar manner to the vegetable variety. It has been shown to have considerable antidotal power against vegetable poisons, as opium, nux vomica, aconite, and nearly all active organic poisons.

The dose as an antacid is a teaspoonful to a tablespoonful; as an antidote, half an ounce to two ounces or more.

CARBONIC ACID. H_2CO_3 .

Carbonic anhydride (CO_2) + H_2O = Carbonic acid (H_2CO_3).

Therapeutics.—Carbonic acid is useful in checking vomit-

ing and gastric irritation. It may be taken advantageously in that form of lithiasis which is attended by white or phosphatic deposits in the urine.

Administration.—It is best given as carbonic acid water, or in the form of effervescent draughts composed of citric acid and bicarbonate of potash.

HYDROCYANIC ACID. Prussic acid. HCN.

Pharmacopæial Preparation.—By the addition of dilute sulphuric acid to ferrocyanide of potassium.

The *Acidum Hydrocyanicum Dilutum* of the British Pharmacopeia consists of hydrocyanic acid dissolved in water and constituting 2 per cent. by weight of the solution.

Scheele's prussic acid contains 4 per cent. of anhydrous acid.

The anhydrous acid is very volatile, and speedily decomposes into a carbonaceous mass. The diluted acid can be much longer preserved if a trace of a mineral acid be present.

Officinal Preparation.—VAPOR ACIDI HYDROCYANICI, inhalation of hydrocyanic acid. This consists of 10 to 15 min. of HCN to 1 fluid drachm of cold water, mixed in a suitable apparatus.

Therapeutics.—The anhydrous acid is an active poison, arresting the functions of the whole body, but not specially affecting any particular organ. If the dose be large, death is almost instantaneous. The poisonous effects are the same when the acid is applied to the mucous membranes, or when inhaled in vapour, as when it is received into the stomach. In medicinal doses, and much diluted, it is employed to relieve spasm and pain, and is given in gastrodynia, pyrosis, enterodynæ, and vomiting. It is also useful in nervous cough, and is given in pertussis, asthma, etc.; chorea, epilepsy, neuralgia, hysteria and tetanus are reported to derive benefit from its exhibition. Externally it is applied to cutaneous affections accompanied by much itching, great care being taken that there is no abrasion of the skin. The dose of acidum hydrocyanicum dilutum is 2 minimæ to 8 minimæ.

In the form of a lotion 1 fluid drachm may be added to 10 ounces of water, etc. To this lotion glycerine is a very useful adjunct, since by it evaporation is retarded.

Upon distilling the leaves of the cherry laurel (*Prunus Laurocerasus*) with water, some volatile oil and *prussic acid* are yielded. This fact is due to the decomposition of the *Amygdaline* ($C_{20}H_{27}NO_{11}$) contained in the leaves. *Aqua Lauro-Cerasi* is considered by some to be an elegant method of administering prussic acid. The dose is 5 to 30 minima.

The bitter almond (*Amygdala amara*) also contains *amygdaline*, together with an albuminous principle termed *emulsine*. Upon moistening this almond a species of fermentation is set up, and *prussic acid* and *volatile oil of bitter almonds* or *hydride of Benzol* ($C_6H_5O_2H$) together with *glucose* ($C_6H_{12}O_6$) and *formic acid* (CH_2O_2) are formed.

CHLORINE. Chlorum. Cl = 35.5.

This gas is prepared by the action of hydrochloric acid upon the black oxide of manganese.

Officinal Preparations.—(1) LIQUOR CHLORI, solution of chlorine (the gas dissolved in water). *Dose*, 1 or 2 drachms properly diluted.

(2) VAPOR CHLORI, inhalation of chlorine (prepared from chlorinated lime and water); employed when local action upon the mucous membrane of the mouth, fauces and bronchial tubes is desired.

Therapeutics.—Chlorine is used as a fumigating, disinfectant, and antiseptic agent, and is a valuable antidote in poisoning by sulphuretted hydrogen, sulphide of ammonium, and prussic acid. When free in vapour, it is powerfully irritant and stimulant, and is sometimes employed in a diluted form in chronic bronchitis and phthisis, and those forms of pulmonary abscess which are accompanied by foetid expectoration. In chronic affections of the larynx it is sometimes useful. The solution, much diluted, may be used as a gargle in ptyalism, aphthæ, and cancrum oris, or in ulceration of the tonsils, in scarlatina and diphtheria. Liquor chlori is sometimes applied to foul ulcers and cancers, and to some forms of skin disease.

From its antiseptic properties it is supposed to have an especial influence upon the functions of the liver; and thus it is employed as a vapour bath, or the body is sponged with the liquor or a solution.

HYDROCHLORIC ACID. HCl.

Hydrochloric acid-gas dissolved in water, and forming 31.8 per cent. by weight of the solution. It may be obtained by the addition of sulphuric acid to chloride of sodium and distilled water.

The ACIDUM HYDROCHLORICUM DILUTUM (diluted hydrochloric acid) is prepared by taking 8 fluid ounces of the strong acid, adding 16 ounces of water, and then adding more water, so that at a temperature of 60°F it shall measure 26½ fluid ounces. *Dose*, 10 to 30 minimæ.

The preparations in which the diluted acid are used are: Liquor morphiæ hydrochloratis, and Liquor strychniæ.

Therapeutics.—The strong acid is powerfully caustic, producing a white stain, which afterwards ulcerates. The diluted acid is refrigerant, tonic and astringent, and is used as a gargle in throat ulceration and in diphtheria.

Adulterations.—Sulphuric acid, chlorine, and iron.

BROMINE. Bromum. Br = 80.

A liquid, non-metallic element, obtained from sea-water and from some saline springs.

Therapeutics.—Seldom employed free. The chief preparations are the Ammonii bromidum and Potassii bromidum. It has some repute in diminishing hypertrophy of the liver and spleen. Bromide of potassium may be given in cases of syphilis, in which the iodide is not well borne. It possesses the alternative powers of the iodide, but is far less powerful. It is employed in diseases of the nervous system, in sleeplessness, and epilepsy, and is of much value in priapism, and nymphomania, and also in menorrhagia.

Begbie says it is of great use in checking the formation of sugar in diabetes mellitus.

Dose of ammonii bromidum, grains 5 to 30.

" of potassii " grains 2 to 20.

Adulterations.—Sometimes contains iodine.

IODINE. Iodum. I = 127.

A non-metallic element, obtained principally from the ashes of sea-weeds.

Officinal Preparations.—LINIMENTUM IODI (iodine, iodide of potassium, camphor and rectified spirit); LIQUOR IODI (iodine, iodide of potassium and water); TINCTURA IODI (iodine, iodide of potassium and rectified spirit); UNGUENTUM IODI COMPOSITUM (iodine, iodide of potassium, rectified spirit and lard); VAPOR IODI (tinctura iodi and water, 1 drachm to 1 ounce), heat slightly, and inhale the rising vapour).

Dose of free iodine, $\frac{1}{4}$ grain, gradually increased.

" of tinctura iodi, 5 to 20 minims.

" of potassii iodidi, 3 to 10 grains or more.

Therapeutics.—Applied externally, free iodine may act as an irritant or vesicant. When rubbed upon the skin for some time, absorption may take place, and the system at large be affected. By inhaling the diluted vapour, the mucous membrane of the respiratory passages is topically acted upon.

Internally, irritation of the intestinal mucous membrane is occasioned. Iodine is very rapidly absorbed into the blood, and may be detected in the urine and other secretions. The activity of the kidneys, mucous membranes and skin is increased, and the glandular and absorbent systems are powerfully influenced. It is also a powerful alterative, in large doses inducing catarrhal symptoms. Iodine and its salts are indicated in scrofula, bronchocele and glandular enlargements, in hypertrophy of the spleen, liver and uterus ; in chronic skin affections, syphilitic or otherwise ; in chronic rheumatism, gout, and tertiary syphilis, and it may be employed for diuresis in dropsies ; and in leucorrhœa.

Adulterations.—These may be water, iodide of cyanogen, plumbago, black oxide of manganese, charcoal and iron.

SULPHUR. S - 32.

Varieties.—(1) SULPHUR PRÆCIPITATUM, precipitated sulphur (sublimed sulphur and slaked lime), a soft, greyish-yellow powder, free from grittiness. *Dose*, 20 to 60 grains.

(2) SULPHUR SUBLIMATUM, sublimed sulphur (from the crude or rough sulphur by sublimation) ; a fine greenish-yellow powder, slightly gritty. *Dose*, 20 to 60 grains.

Officinal Preparations of the sublimed variety.—CONFECTIO SULPHURIS (sublimed sulphur, acid tartrate of potash and syrup of orange-peel). *Dose*, 1 to 2 drachms.

EMPLASTRUM AMMONIACI CUM HYDRARGYRO.

HYDRARGYRI.

SULPHUR PRECIPITATUM. UNGUENTUM SULPHURIS.

(3) SULPHURIS IODIDUM, iodide of sulphur (iodine and sublimed sulphur).

Officinal Preparation.—UNGUENTUM SULPHURIS IODIDL. *Dose*, 30 grains to 1 ounce.

Therapeutics.—In small doses sulphur acts as a stimulant to the skin and mucous membranes, part passing from the skin as sulphuretted hydrogen, and part from the kidneys as sulphuric acid. In larger doses it is a laxative or mild purgative. Externally applied, it is slightly stimulant, destroying the itch insect (*acarus scabiei*), and may be employed in chronic cutaneous diseases, as scabies, impetigo and prurigo. It is given in chronic bronchitis as a stimulant expectorant, and is useful in piles as a mild laxative.

Adulterations.—Sulphurous acid produced in the process of sublimation. Sulphur precipitatum may contain from 50 to 70 per cent. of sulphate of lime.

ACIDUM SULPHURICUM. H_2SO_4 .

An acid produced by the combustion of sulphur and the oxidation of the resulting sulphurous anhydride by means of nitrous vapours. Contains 96·8 per cent. by weight of the sulphuric acid (H_2SO_4), and corresponds to 79 per cent. of sulphuric anhydride (SO_3). Specific gravity, 1·843.

Officinal Preparations.—(1) ACIDUM SULPHURICUM DILUTUM, diluted sulphuric acid; 7 fluid ounces of the strong acid are taken, and 77 fluid ounces of water added; and when the mixture has cooled to 60°F more water is added, so that it shall measure 83½ fluid ounces. Specific gravity, 1·094. *Dose*, 5 to 30 minims. It is used in the preparation of infusum rosæ acidum (1 fluid drachm to 10 fluid ounces).

(2) ACIDUM SULPHURICUM AROMATICUM, aromatic sulphuric acid (sulphuric acid, rectified spirit, cinnamon, ginger). *Dose*, 5 to 30 minims.

Therapeutics.—The strong acid is caustic, and chars the skin. The diluted acid is tonic, refrigerant, and astringent, and may be given to allay thirst in hectic fever, for the night-sweats of phthisis, and to check diarrhoea.

The strong acid rubbed up with lard is occasionally applied to some obstinate forms of skin disease.

Adulterations.—Water, known by the low specific gravity. Lead, detected by dilution with water, a white precipitate falling. Arsenic, from the use of impure sulphur during manufacture. Sulphuric acid sometimes becomes discoloured from traces of organic matter.

ACIDUM SULPHUROSUM. H_2SO_3 .

This consists of sulphurous anhydride (SO_2) dissolved in water, and constituting 9·2 per cent. by weight of the solution. It is prepared from sulphuric acid, wood charcoal, water and distilled water. *Dose*, ½ to 1 fluid drachm.

Therapeutics.—Externally applied, redness and irritation are set up. It is seldom given internally, but is employed in the form of sulphite and hyposulphite of soda. It may be used as a spray for some kinds of sore throat.

PHOSPHORUS. P = 31.

A non-metallic element obtained from bones.

Officinal Preparations.—(1) OLEUM PHOSPHORATUM, phosphorated oil (phosphorus, oil of sweet almonds). *Dose*, 5 to 10 minims.

(2) PILULA PHOSPHORI, pill of phosphorus (phosphorus,

balsam of tolu, and yellow wax). *Dose*, 3 to 6 grains. About $\frac{1}{8}$ grain of phosphorus is contained in 5 grains of the pill mass.

Therapeutics.—Is supposed to be powerfully stimulant and aphrodisiac, and a nervine tonic. It is used in nervous diseases and in phthisis.

ACIDUM PHOSPHORICUM DILUTUM.

Diluted phosphoric acid consists of tribasic phosphoric acid (H_3PO_4) dissolved in water, and corresponding to 10 per cent. by weight of phosphoric anhydride (P_2O_5). It is prepared from phosphorus, nitric acid, and distilled water. *Dose*, 10 to 30 minims.

Therapeutics.—Somewhat like diluted sulphuric acid, but less astringent. It allays thirst in diabetes mellitus, is said to influence the growth of bony tumours, and is well adapted to the treatment of affections connected with alkalinity of the urine.

Adulterations.—Sulphuric acid, hydrochloric acid, and metallic impurities.

ARSENICUM. Arsenic. As = 75.

ARSENIOUS ANHYDRIDE (As_2O_3).^{*} Prepared by roasting arsenical ores, and purifying by sublimation. *Dose*, $\frac{1}{80}$ to $\frac{1}{5}$ of a grain in solution.

Officinal Preparations.—(1) LIQUOR ARSENICALIS, arsenical solution (arsenious anhydride, carbonate of potash, and compound tincture of lavender; thus forming an arsenite of potash). 4 grains of As_2O_3 to the ounce. *Dose*, 2 to 5 minims.

(2) LIQUOR ARSENICI HYDROCHLORICUS, hydrochloric solution of arsenic (hydrochloric acid added to arsenious anhydride). 4 grains of As_2O_3 to the uncqua. *Dose*, 2 to 8 minims.

The preparations containing arsenic anhydride (As_2O_5) are: (1) SODÆ ARSENIAS, arseniate of soda ($Na_2HAsO_4 + 7H_2O$), (arsenious anhydride, nitrate of soda, and dried carbonate of soda). *Dose* $\frac{1}{8}$ to $\frac{1}{2}$ of a grain.

LIQUOR SODA ARSENIATIS (arseniate of soda, rendered anhydrous by a heat not exceeding 300°F). 4 grains of the salt in 1 ounce of distilled water. *Dose*, 5 to 10 minims.

* This substance is termed *arsenious acid* in the British Pharmacopœia, but since, in my "Aids to Chemistry," I have carefully avoided calling any substance an acid which does not contain hydrogen, I have thought it expedient to apply to it the term *anhydride*.

(2) FERRI ARSENIAS ($\text{Fe}_3\text{As}_2\text{O}_8$), arseniate of iron partially oxidised (sulphate of iron, arseniate of soda dried at 300°F , acetate of soda and boiling distilled water). *Dose*, $\frac{1}{16}$ to $\frac{1}{4}$ of a grain.

Therapeutics.—Arsenical preparations are employed in small doses in the treatment of skin diseases of a non-syphilitic origin, as nervine tonics in chlorea and epilepsy, and for their antiperiodic effects in ague; they should be given after a meal. In large doses arsenic produces irritation of the alimentary canal and mucous membrane of the eyes; pain in the epigastrum, nausea, and irritation of the eyelids, are therefore indications for discontinuing its administration.

BORON. B = 11.

BORAX.—Borate of Soda ($\text{Na}_2\text{B}_4\text{O}_7 + 10\text{H}_2\text{O}$) is found native, but is also prepared by neutralising boracic acid with carbonate of soda. *Dose*, 5 to 40 grains.

Officinal Preparation.—MEL BORACIS (borax in fine powder, and clarified honey).

GLYCERINUM BORACIS (borax in powder and glycerine).

Therapeutics.—Borax acts like a mild alkali: it tends to produce diuresis. It is used in combination with ergot to produce expulsion of the placenta. It exercises a peculiar topical, soothing influence when applied to mucous membranes, and may be used as a gargle with glycerine or honey in aphthæ of the throat or tongue, and in mercurial salivation; it is also employed as a lotion in irritable conditions of the vagina and uterus.

POTASSIUM. Kalium. K = 39.

LIQUOR POTASSÆ.—Solution of potash (KHO) is prepared from carbonate of potash and slaked lime. It is a colourless liquid, kept in green glass bottles, the white glass containing lead. *Dose*, 10 minims to 1 drachm.

Therapeutics.—In large doses and undiluted, KHO is an irritant caustic poison; when administered internally, in a diluted form, it is very useful for certain forms of dyspepsia, acting as a direct antacid, and neutralising any free acid in the stomach. It is also alterative to the glandular system, increasing the activity of the secreting and excreting organs. It may be given in skin diseases dependent upon a morbid condition of the stomach, as in erythema; as a blood alterant in pericarditis, pleuritis, and periostitis; and in chronic bronchitis, scrofula, syphilis, and chronic rheumatism. It is

occasionally used externally, as a wash, in some chronic skin diseases.

Adulterations.—Carbonate and sulphate of potash, chloride of potassium, lime.

POTASSIA CAUSTICA.—Caustic potash (KHO) is prepared by boiling down liquor potassæ to a syrupy consistence, in a silver or iron vessel, until a drop removed upon a glass rod solidifies on cooling : it is then poured into moulds.

Therapeutics.—For touching ulcers and making issues ; and is made into a paste, with spirit, for destroying cancers, etc.

Adulterations.—The same as of liquor potassæ, but in addition the oxides of iron and aluminium.

POTASSÆ CARBONAS.—Carbonate of potash ($K_2CO_3 + 16H_2O$) is prepared from pearl-ashes (obtained by the lixiviation of wood-ashes). *Dose*, 10 grains to 20 grains.

Therapeutics.—Almost the same as liquor potassæ, but much less caustic.

It is contained in *Decoctum aloes compositum* and *Mistura ferri composita*.

Adulterations.—Sulphates and chlorides of potassium.

POTASSÆ BICARBONAS.—Bicarbonate of potash ($KHCO_3$) is prepared by passing a stream of carbonic anhydride through a solution of potassæ carbonas to saturation, and subsequent crystallisation. *Dose*, 10 grains to 1 drachm.

20 grains of this salt neutralise 14 grains of citric acid and 15 of tartaric acid.

Therapeutics.—A direct antacid, rendering the urine strongly alkaline, and probably influencing the composition of the blood. It is chiefly useful in dyspepsia, the uric acid diathesis, and acute rheumatism.

Adulteration.—Carbonate of potash.

Liquor potassæ effervescens is prepared by introducing carbonic anhydride into bicarbonate of potash and water, under a pressure of 7 atmospheres.

POTASSÆ ACETAS.—Acetate of potash ($KC_2H_3O_2$) (acetic acid and carbonate of potash).

Dose, 10 grains to 1 drachm, as a *diuretic*; as a *purgative*, 2 drachms upwards.

Therapeutics.—Often appears in the urine in the form of the carbonate ; renders that fluid alkaline, and increases its secretion. In large and concentrated doses, a slight purgative effect is produced. It is, perhaps, the most powerful of all saline diuretics, and is very useful in various forms of dropsy, in acute rheumatism, skin diseases, chronic enlargements of

glands and other organs ; it is occasionally used as an anthelmintic.

Adulterations.—Traces of sulphates and chlorides.

POTASSÆ CITRAS.—Citrate of potash ($K_3C_6H_5O_7$) (citric acid and carbonate of potash). *Dose*, 20 grains to 1 drachm.

Therapeutics.—Is more agreeable, more readily absorbed, and less likely to purge than the other vegetable salts of potash : valuable as a saline febrifuge, increasing the secretion from the kidneys, and appearing as the carbonate in the urine. May be employed in the uric acid diathesis, and in chronic diseases for which the acetate has been prescribed. It possesses powerful antiscorbutic properties.

POTASSÆ TARTRAS.—Tartrate, or neutral tartrate of potash ($K_2C_4H_4O_6$) (boiling the acid tartrate of potash with carbonate of potash).

Dose, 10 grains to 1 drachm as a *diuretic* and *alterative* ; 2 drachms to 200 grains as a *purgative*.

Therapeutics.—Diuretic in small doses, and eliminated from the urine as carbonate. In larger doses, a hydragogue purgative, generally combined with, and increasing the action of, such vegetable purgatives as rhubarb, senna, etc.

Adulterations.—Sulphates.

POTASSÆ TARTRAS ACIDA.—Acid tartrate of potash ($KHC_4H_4O_6$), sometimes called cream of tartar (obtained from *argol*, the crude tartar deposited during the fermentation of grape-juice). This substance is contained in *Pulvis jalapa compositus* and *Confectio sulphuris*.

Dose, as a *refrigerant* and *diuretic*, 20 grains to 1 drachm.

“ as a *purgative* ” 120 grains to 300 grains.

Therapeutics.—In small doses, refrigerant and diuretic ; in large doses, a powerful hydragogue purgative. It is given as an acid drink in febrile affections, and as a purge in dropsy dependent upon cardiac or renal disease, and is best combined with jalap, gamboge, or scammony. Belladonna is said to assist its action.

Adulteration.—Tartrate of lime.

POTASSÆ SULPHAS.—Sulphate of potash (neutral), K_2SO_4 . Prepared from the residuum (an impure acid sulphate of potash) of the distillation of nitric acid, when this acid is made by treating nitrate of potash with sulphuric acid, the excess of acid being got rid of. Slaked lime is added, which is again got rid of by means of carbonate of potash. Diluted sulphuric acid is then added to the filtered liquid, the sulphate of potash being subsequently submitted to evaporation and crystallisation.

K_2SO_4 is contained in *Pulvis ipecacuanhae compositus*, *Pilula eclocynthidis composita*, and *Pilula colocynthidis cum hyoscyamo*.

Dose, as a purgative, 20 grains to 2 drachms ; in smaller doses it is alterative.

Therapeutics.—A mild purgative, generally given with rhubarb and other vegetable aperients. Evidence has been lately given of its acting as a poison in large doses ; but it is often employed on account of its mechanical properties, since it intimately divides vegetable substances, as in Dover's powder.

POTASSÆ NITRAS.—Nitrate of potash, Nitre (KNO_3) ; found native as an efflorescence on the soil of India, and prepared artificially by "nitrification."

Dose, as a refrigerant and diuretic, 5 to 20 grains.

" " vascular sedative ... 20 grains to $\frac{1}{2}$ drachm.

Therapeutics.—Refrigerant and diuretic ; and in large doses powerfully sedative to the heart and vascular system. Is given in febrile affections, and to allay irritation of the mucous membrane of the stomach in dyspepsia. It is said to be especially useful in acute rheumatism.

Adulterations.—Traces of sulphate or chloride of calcium.

POTASSÆ CHLORAS.—Chlorate of potash ($KClO_3$) ; prepared by passing chlorine gas through carbonate of potash and slaked lime. Contained in *Trochisci potassæ chloratis*. *Dose*, 10 to 20 grains.

Therapeutics.—Refrigerant and diuretic, similar to nitre ; almost a specific in severe tonsillitis, and stomatitis, and useful in mercurial ptyalism, salivation, in scarlatina, typhoid fever, etc.

Adulteration.—Chloride of potassium.

POTASSÆ PERMANGANAS.—Permanganate of potash ($KMnO_4$). Prepared from chlorate of potash, black oxide of manganese, caustic potash, diluted sulphuric acid and distilled water. Contained in *Liquor potassæ permanganatis*, of which the dose internally is 1 to 4 drachms ; and when used externally, 1 drachm to 5 or 10 ounces of water.

Therapeutics.—A powerful oxydising agent ; antiseptic and a deodoriser ; said to be changed in the stomach into black oxide of manganese, giving off oxygen. It is applied to foul ulcers and gangrenous parts ; also used as a gargle, injection, etc., in foetid discharges, and occasionally in diphtheria. The importance of its internal administration is doubtful.

POTASSII BROMIDUM.—Bromide of potassium (KBr). Bromine is added to a solution of potash ; bromate of potash is

former, and this is reduced by finely-powdered wood charcoal; boiling distilled water is then added. *Dose*, 5 to 15 grains, or more.

Therapeutics.—It is used to produce the constitutional effects of bromine.

Adulterations.—Iodide of potassium and bromate of potassium.

POTASSII IODIDUM.—Iodide of potassium (KI); iodine is added to a solution of potash. Iodate of potassium is first formed, which is reduced by finely-powdered wood charcoal. It is contained in *Unguentum potassii iodidi*, and *Linimentum potassii iodidi cum sapone*. *Dose*, 2 to 10 grains or more.

Therapeutics.—Is better adapted for internal use than iodine, since it produces no local irritation. It possesses the power of eliminating metallic substances, as mercury and lead, from the system.

Adulterations.—It may be damp, or contain carbonate of potash, chloride of sodium or potassium, iodate of potassium and free iodine.

POTASSA SULPHURATA.—Sulphurated potash (carbonate of potash and sublimed sulphur.) Contained in *Unguentum potassæ sulphuratae*, and employed in chronic rheumatism and skin affections.

POTASSÆ PRUSSIAS FLAVA.—Ferrocyanide of potassium, or yellow prussiate of potash ($K_4FeCy_6 \cdot 3H_2O$). Prepared by boiling horns and hoofs and clippings of hides in an iron pot with carbonate of potash. Is not used medicinally. Does not appear to be poisonous, and is used for the preparation of prussian acid.

POTASSÆ PRUSSIAS RUBRA.—Ferricyanide of potassium, or red prussiate of potash (K_3FeCy_6) is merely used as a test for the protosalts of iron.

SODIUM. Natrium. Na — 23.

LIQUOR SODÆ.—Solution of soda (NaHO) (carbonate of soda, slaked lime and distilled water). It is used in the preparation of sulphurated antimony. *Dose*, 10 minimis to 1 drachm, freely diluted.

Therapeutics.—Probably the same as of liquor potassæ, but it is seldom used.

SODA CAUSTICA.—Caustic soda (NaHO) is prepared from liquor soda in a similar manner to caustic potash.

Therapeutics.—Used externally as a caustic.

SODÆ CARBONAS.—Carbonate of soda ($Na_2CO_3 + 10H_2O$) (from the ashes of marine plants, or by the chemical decomposition of chloride of sodium). *Dose*, 10 to 30 grains.

SODÆ CARBONAS EXSICCATA.—Dried carbonate of soda; an amorphous powder, prepared by driving off the water of crystallisation by heat from the carbonate of soda. *Dose* 5 to 15 grains.

Therapeutics.—Analogous to carbonate of potash, but less caustic.

Adulteration.—A little sulphate of soda.

SODÆ BICARBONAS.—Bicarbonate of soda (NaHCO_3)—by passing a stream of carbonic anhydride through the *dry* carbonate.

Officinal Preparations.—(1) LIQUOR SODÆ EFFERVESCENTS (bicarbonate of soda and water, and as much carbonic anhydride as can be introduced under a pressure of 7 atmospheres). *Dose*, 10 grains to 1 drachm.

(2) TROCHISCI SODÆ BICARBONATIS (refined sugar, gum acacia, mucilage of gum acacia and distilled water). Each lozenge contains 5 grains of bicarbonate of soda. *Dose*, 1 to 6 lozenges.

Therapeutics.—Very like bicarbonate of potash, but not applicable to the uric acid diathesis.

Adulterations.—Carbonate and sulphate of soda in an effervescent state.

SODÆ SULPHAS.—Sulphate of soda ($\text{NaSO}_4 + 10\text{H}_2\text{O}$), called Glauber's salts (chloride of sodium and sulphuric acid; and subsequent neutralisation with carbonate of soda). *Dose*, $\frac{1}{2}$ ounce to 1 ounce; smaller when effloresced.

Therapeutics.—A saline purgative, and in small doses a diuretic.

SODÆ ACETAS.—Acetate of soda ($\text{NaC}_2\text{H}_3\text{O}_2 + 3\text{H}_2\text{O}$), prepared from carbonate of soda and acetate of potash; is used in the preparation of phosphate and arseniate of iron. *Dose*, 20 grains to 1 drachm.

Therapeutics.—A mild diuretic, but seldom used.

SODÆ HYPOPHOSPHIS.—Hypophosphite of soda (NaPH_2O_6). Prepared by adding carbonate of soda to a solution of hypophosphite of lime so long as any precipitate of carbonate of lime is formed, then filtering and evaporating to dryness, stirring constantly until the commencement of solidification.

SODÆ HYPOSULPHIS.—Is given for chronic vomiting, to destroy the sarcinae ventriculi, sulphurous anhydride being set free by the gastric juice.

SODÆ NITRAS.—Nitrate of soda (NaNO_3), is a native salt and is used for the production of arseniate of soda, but not employed medicinally.

SODÆ PHOSPHAS.—Phosphate of soda ($\text{NaHPO}_4 + 12\text{H}_2\text{O}$) (by digesting bone-ash with sulphuric acid, sulphate of lime and free phosphoric acid being formed ; carbonate of soda is then added until a precipitate no longer falls, and the solution is slightly alkaline. It is then filtered and crystallised). *Dose*, as a *purgative*, $\frac{1}{2}$ drachm to 1 ounce ; as a *diuretic*, 1 to 2 drachms.

Therapeutics.—In large doses, a mild saline purgative ; in smaller ones, a diuretic, rendering the urine alkaline. It is sometimes employed as a mild purge for children.

Adulterations.—Phosphate of lime, which renders the solution milky.

LIQUOR SODÆ CHLORATÆ.—Solution of chlorinated soda. Prepared by passing chlorine gas through a solution of carbonate of soda until the solution attains the specific gravity of 10·6. *Dose*, 10 to 20 minims in 1 ounce of water ; as a gargle, $\frac{1}{2}$ ounce to 1 ounce in a pint of water.

Officinal Preparation.—**CATAPLASMA SODÆ CHLORATÆ.**

Therapeutics.—Internally antiseptic and stimulant, sometimes employed, much diluted, in fevers of a low malignant type, as scarlatina, etc. Externally, it is applied to unhealthy gangrenous parts ; as a gargle for ulcerated sore throat, and in ulcerated mouths from the abuse of mercury.

SODII CHLORIDUM.—Chloride of sodium, common salt (NaCl), occurs native as rock salt, in brine springs and in sea-water. *Dose*, a tablespoonful or more as an emetic.

Therapeutics.—A necessary article of food. Is contained in blood and other animal fluids. Its deficiency may cause disease, the production of worms, etc. In large doses it is emetic and purgative, in smaller doses a slight stimulant and alterative. Externally it is stimulant and rubefacient. Sponging and bathing with salt water is valuable in chronic rheumatism, joint affections, etc. Sea water is used as an emetic, purgative, and anthelmintic.

SODA TARTARATA.—Tartarated soda ($\text{NaKC}_4\text{H}_4\text{O}_6 + 4\text{H}_2\text{O}$), called Rochelle salt ; obtained from acid tartrate of potash, carbonate of soda and distilled water.

Dose, as a *purge*, 2 drachms to $\frac{1}{2}$ ounce ; as a *diuretic*, $\frac{1}{2}$ drachm to 1 drachm.

Therapeutics.—A mild saline purgative ; in smaller doses diuretic.

SODÆ CITRO-TARTRAS EFFERVESCENS.—Effervescing citro-tartrate of soda (bicarbonate of soda, tartaric acid, and citric acid in powder).

Therapeutics.—The same as tartarated soda, but more plea-

sant to the taste, and sits more easily on the stomach on account of the carbonic anhydride evolved.

LITHIUM. Li = 7.

LITHIÆ CARBONAS.—Carbonate of lithia (Li_2CO_3). *Dose*, 3 to 6 grains.

Is used in the preparation of **LIQUOR LITHIÆ EFFERVESCENTES** (carbonate of lithia, 10 grains to 1 pint of water). *Dose*, 5 to 10 ounces.

Therapeutics.—Very useful in the uric acid diathesis, since a very small amount of lithia will form a soluble salt with uric acid, and be eliminated by the urine. It is more powerful than the corresponding potash salt, and is employed with success in gout and calculous affections.

LITHIÆ CITRAS.—Citrate of lithia ($\text{Li}_3\text{C}_6\text{H}_5\text{O}_7$). Prepared from carbonate of lithia, citric acid, and warm distilled water. *Dose*, 5 to 10 grains.

Therapeutics.—Resembles the carbonate in its remote antacid properties, but has no direct influence in neutralising acid. It is a neutral salt.

CALCIUM. Ca = 40.

CALX.—Lime (CaO) ; an alkaline earth with some impurities, obtained by calcining chalk or limestone, to expel the carbonic anhydride.

Officinal Preparations.—(1) **CALCIS HYDRAS**, slaked lime (CaH_2O_2), lime slaked with water; should be recently prepared.

(2) **LIQUOR CALCIS.**—Lime water. (Slaked lime, 2 ounces, and distilled water, 1 gallon.) *Dose*, $\frac{1}{2}$ to 2 ounces or more in milk.

(3) **LIQUOR CALCIS SACCHARATUS.**—Saccharated solution of lime. (Slaked lime, 1 ounce; refined sugar, in powder, 2 ounces; distilled water, 1 pint.) *Dose*, 15 to 60 minimis.

(4) **LINIMENTUM CALCIS.**—(Lime-water and olive oil; equal parts of each.)

Therapeutics.—Only used internally, as liquor calcis; acts as a direct antacid upon the intestinal canal, and after absorption upon the blood and secretions. It is astringent, diminishing secretion; and is useful in dyspepsia and diarrhoea associated with acidity. Has proved serviceable in rickets, etc. Linimentum calcis is applied to burns.

Adulterations of Lime.—Carbonic acid and metallic impurities.

CALCIS CARBONAS PRÆCIPITATA.—Precipitated carbonate of lime (CaCO_3) (chloride of calcium, carbonate of soda, and boiling distilled water). *Dose*, 10 to 60 grains.

Is contained in the *Trochisci Bismuthi*. 4 grains in each lozenge, nearly.

Therapeutics.—Not often used medicinally, but the same as *creta præparata*.

CRETA PRÆPARATA.—Prepared chalk (chalk freed from most of its impurities by elutriation, and afterwards dried in small masses, which are usually of a conical form). *Dose*, 10 to 60 grains.

Officinal Preparations.—(1) **HYDRARGYRUM CUM Creta** (mercury, by weight, 1 ounce; prepared chalk, 2 ounces, rubbed together in a porcelain mortar until metallic globules are no longer visible, and the whole assumes a grey colour). *Dose*, 3 to 8 grains.

(2) **MISTURA CRETÆ** (prepared chalk, gum acacia, syrup and cinnamon water). *Dose*, 1 to 2 fluid ounces.

(3) **PULVIS CRETÆ AROMATICUS** (cinnamon-bark, nutmeg, saffron, cloves, cardamom seeds, sugar, and prepared chalk; all in powder). *Dose*, 10 to 60 grains.

(4) **PULVIS CRETÆ AROMATICUS CUM OPIO** (pulvis cretæ aromaticus, with the addition of pulvis opii, 1 gr. in 40 grains of the entire powder).

Dose, depends upon the amount of opium desirable to administer.

Therapeutics.—Prepared chalk is antacid and astringent. It is used in diarrhoea, either alone or combined; but should not be continued for any length of time, as it may lead to inconvenient concretions.

CALCIUM CHLORIDUM.—Chloride of calcium (CaCl_2), prepared by the addition of hydrochloric acid to carbonate of lime. *Dose*, 10 grains and upwards.

Therapeutics.—Introduced into chemistry and pharmacy on account of its great power of absorbing water. Is used in the preparation of chloroform, ether, etc.; and in the rectification of spirit. Medicinally it acts upon the glandular system, and was formerly used in scrofula. It is said to allay certain forms of vomiting.

CALX CHLORATA.—Chlorinated lime (CaOCl_2), a product obtained by exposing slaked lime to the action of chlorine gas, as long as the latter is absorbed. Possesses bleaching and disinfectant properties, and is used in the preparation of liquor calcis chloratæ, vapor chlori and chloroform. Used with water as a disinfectant, since it evolves chlorine; but

chlorinated soda is preferable. It is not employed either internally or externally.

CALCIS PHOSPHAS.—Phosphate of lime ($\text{Ca}_3\text{P}_2\text{O}_8$), (bone-ash dissolved in hydrochloric acid and precipitated by liquor ammoniae). Is contained in pulvis antimoniaialis (2 parts in 3), but is seldom used in medicine in the present day. Has been employed with advantage, with the idea of promoting the formation of bone, in scrofula and rickets. *Dose*, 10 to 20 grains.

CALCIS HYPOPHOSPHIS.—Hypophosphate of lime ($\text{Ca}_2\text{PH}_2\text{O}_9$) is obtained by heating phosphorus with hydrate of lime and water until phosphuretted gas ceases to be evolved; the liquid is then filtered, uncombined lime is separated by carbonic anhydride, and the remaining solution evaporated until the salt crystallises. This salt, like the hypophosphate of soda, is said to be useful in the treatment of phthisis. *Dose*, 5 to 10 grains.

BARIUM. Ba = 137.

BARI CHLORIDUM.—Chloride of barium ($\text{BaCl}_2 + 2\text{H}_2\text{O}$). Is prepared by acting upon the carbonate of barium with hydrochloric acid. Is used as a precipitant of sulphuric acid.

Therapeutics.—This salt has been used in small doses as an alterative, influencing the glandular system especially, and it is supposed to act upon the nerve centres; but, being an irritant poison, is seldom employed in medicine.

ALUMINIUM. Al = 27·4.

Officinal Preparations:

(1) **ALUMEN.**—Alum ($\text{NH}_4\text{Al}(\text{SO}_4)_2 + 12\text{H}_2\text{O}$), a double sulphate of alumina and ammonia crystallised from solution in water; prepared from Alum-schist.

(2) **ALUMEN EXSICCATUM,** dried alum; prepared by depriving alum of its water by heat.

Dose, as an astringent, 10 to 20 grains.

,, as a purgative, $\frac{1}{2}$ drachm to 1 drachm.

Therapeutics.—Astringent in small doses, and in large doses purgative. Used locally as a gargle, etc., and internally for whooping cough.

Incompatibles.—Alkalies and their carbonates; infusions and decoctions containing tannin, tartrates, salts of lead, baryta and lime.

MAGNESIUM. Mg = 24.

MAGNESIA (MgO).—Heavy magnesia. The carbonate of magnesia is exposed to a low red heat in a Hessian crucible,

until a small quantity, taken from the centre when it has cooled and has been dropped into diluted sulphuric acid, causes no effervescence. *Dose*, 10 grains to 1 drachm.

MAGNESIA LEVIS (MgO).—Light magnesia (prepared from the light carbonate of magnesia in the same manner as the foregoing). Contained in *Pulvis Rhei Compositus* (powdered rhubarb, light magnesia and ginger); the relative weight of the light to the heavy magnesia is 1 to $3\frac{1}{2}$. *Dose*, as an *antacid*, 10 to 20 grains; as an *adjunct* and *purgative*, 20 grains to 1 drachm.

Therapeutics.—A direct antacid, neutralising acid in the stomach. It is liable to cause concretions if given for a length of time. All the salts of magnesia have an aperient tendency, and after absorption into the blood the urine is rendered alkaline, uric acid and the urates being held in solution. It is given in acidity of the stomach and heartburn, and in an acid condition of the intestines. It is very useful combined with rhubarb in the early stages of diarrhoea. Is most suitable for children, and for the treatment of gouty affections. It is considered by some authors to be a lithontriptic, dissolving concretions or calculi composed of uric acid.

Adulterations.—May contain a little sulphate or carbonate of magnesia, or lime.

MAGNESIA CARBONAS.—Heavy carbonate of magnesia ($(MgCO_3)_3 MgO + 5H_2O$). (Sulphate of magnesia, carbonate of soda and boiling water.)

MAGNESIA CARBONAS LEVIS.—Light carbonate of magnesia ($(MgCO_3)_3 MgO + 5H_2O$). This is prepared in the same manner as the preceding compound, the difference depending upon the amount of heat employed, and the amount of dilution. *Dose*, of either carbonate, 10 grains to 1 drachm.

Officinal Preparations.—Carbonate of Magnesia is contained in the *Trochisci Bismuthi* (3 grains in each lozenge).

LIQUOR MAGNESIE CARBONATIS (sulphate of magnesia, carbonate of soda and water, pure carbonic anhydride being passed through) contains 13 grains of magnesia, in the form of bicarbonate, to 1 ounce of the solution. *Dose*, 1 to 2 ounces.

Therapeutics.—The same as magnesia, both as antacid and purgative; but when it encounters any acidity in the stomach it gives off carbonic anhydride.

Adulterations.—Lime and some sulphates.

MAGNESIA SULPHAS.—Sulphate of magnesia, Epsom salts ($MgSO_4 + 7H_2O$), (from dolomite, a carbonate of lime and magnesia, by the addition of sulphuric acid); formerly made from "bittern."

Officinal Preparation.—ENEMA MAGNESIE SULPHATIS (sulphate of magnesia, 1 ounce ; olive-oil, 1 ounce ; and mucilage of starch, 15 ounces). Sulphate of magnesia is contained in *Mistura Sennæ Composita*.

Dose, as an *enema*, 1 ounce or more ; as a *purge*, 2 to 4 drachms ; in combination, 60 grains and upwards ; as a *diuretic*, 20 grains to 1 drachm.

Therapeutics.—In ordinary doses a saline purgative, inducing free watery discharge ; in small doses causes diuresis. Is employed in febrile affections, and in congestion of the portal system. With the infusion of senna it forms the ordinary black draught. It is generally given in combination, since when administered alone it frequently causes uncomfortable distension of the abdomen.

Adulterations.—When made from “bittern” it may contain chloride of sodium and magnesium.

ZINCUM. Zinc. Zn = 65.

ZINCI OXIDUM.—Oxide of zinc (ZnO), (carbonate of zinc exposed to a low red heat). *Dose*, 2 to 10 grains in pill or powder.

Officinal Preparation.—UNGUENTUM ZINCI (1 part in $6\frac{1}{2}$ of benzoated lard nearly).

Therapeutics.—In large doses causes vomiting ; in small doses is tonic and astringent, acting upon the nervous system, and is given to check excessive perspiration. Used in chorea, epilepsy, hysteria, neuralgia, and whooping cough. Externally it is applied to ulcerations and excoriated surfaces.

Adulterations.—Chalk and carbonate of magnesia.

ZINCI CHLORIDUM.—Chloride of zinc ($ZnCl_2$), (granulated zinc, hydrochloric acid, carbonate of zinc and distilled water). *Dose*, internally, $\frac{1}{2}$ to 2 grains.

Officinal Preparation.—LIQUOR ZINCI CHLORIDI (366 grains to 1 fluid ounce).

Therapeutics.—Externally a powerful escharotic ; when in solution, irritant and astringent, and employed in cancer, malignant ulcers, and for the removal of nævi ; generally made into a paste with flour or gypsum. It is given internally, though seldom, in chorea and epilepsy.

ZINCI SULPHAS.—Sulphate of zinc ($ZnSO_4 + 7H_2O$), (granulated zinc, sulphuric acid, distilled water, solution of chlorine, and carbonate of zinc). *Dose*, as a *tonic or astringent*, 1 to 3 grains ; as an *emetic*, 10 to 30 grains.

Therapeutics.—In large doses a direct and speedy emetic ; useful in opium and other poisoning. Is given in phthisis

and those forms of dyspepsia in which free emptying of the stomach is desirable, without producing much depression. In small doses an astringent and nervine tonic, given in chorea, epilepsy and hysteria ; also employed as an injection in leucorrhœa and gleet.

ZINCI CARBONAS.—Carbonate of zinc ($\text{ZnCO}_3(\text{ZnO})_2 + 3\text{H}_2\text{O}$), (sulphate of zinc, carbonate of soda, and boiling distilled water). Used in the preparation of the acetate, chloride, oxide and sulphate of zinc. *Dose*, 1 to 10 grains in pill or powder.

Therapeutics.—May be used in the same cases as the oxide, but it is rarely used medicinally.

ZINCI ACETAS.—Acetate of zinc ($\text{Zn}(\text{C}_2\text{H}_5\text{O}_2)_2 + 2\text{H}_2\text{O}$), (carbonate of zinc, acetic acid, and distilled water). *Dose*, as a tonic, 1 to 2 grains ; as an emetic, 10 to 20 grains.

Therapeutics.—Similar to the sulphate.

ZINCI VALERIANAS.—Valerianate of zinc ($\text{Zn}(\text{C}_8\text{H}_9\text{O}_2)_2$), (sulphate of zinc, valerianate of soda, and distilled water). *Dose*, 1 to 3 grains ; increased until some nausea is occasioned.

Therapeutics.—A nervine tonic and antispasmodic, given in hysteria, chorea, epilepsy and neuralgic affections, in which the combined effect of valerian and the metal appears desirable.

CADMIUM. Cd = 112.

CADMII IODIDUM.—Iodide of cadmium (CdI_2). Prepared by direct combination of cadmium and iodine in the presence of water.

Officinal Preparation.—**UNGUENTUM CADMII IODIDI** (1 part in 8 of lard).

Therapeutics.—Not given internally, but used in the same manner as the iodide of lead ; does not produce any staining of the skin or any unpleasant effects after absorption. It sometimes causes irritation of the skin, and should be diluted with lard or some other bland substance.

MANGANESE. Manganese. Mn = 55.

MANGANESII OXIDUM NIGRUM.—Black oxide of manganese (MnO_2). Found native ; chiefly used for the production of chlorine.

Therapeutics.—Only occasionally employed. The proto-sulphate in doses of 1 to 2 drachms induces purging. In small doses this salt and the carbonate have been given with the idea of improving the blood in anaemia ; it somewhat resembles iron in its action.

FERRUM. Iron. Fe = 56.

WROUGHT IRON.—In the form of wire or nails, free from oxide ; used in the preparation of : (1) **MISTURA FERRI AROMATICA** (pale cinchona bark, calumba root, cloves, fine iron wire, compound tincture of cardamoms, tincture of orange-peel and peppermint-water). *Dose*, 1 to 2 ounces.

(2) **VINUM FERRI** (fine iron wire, 1 ounce ; sherry, 1 pint). *Dose*, 1 to 2 drachms.

Therapeutics of the IRON PREPARATIONS IN GENERAL :

Iron forms an essential part of the red globules of the blood, 6½ per cent. of iron being contained in the pure colouring matter or haematin. It appears to be intimately united with the organic element haematin, and not to exist in the condition of proto- or per- oxide. When this metal is absent from the blood, the anaemic condition is produced. All the salts of iron exert the same influence, and it cannot be asserted that any one is superior to another. Independently of their haematinic property, they exercise a direct influence upon the nervous system, as in chorea, epilepsy, neuralgia, and hysteria. Most of the preparations are astringent and therefore apt to cause constipation, and it is consequently expedient to combine them with some mild aperient, such as aloes. The persalts are the most astringent. All iron preparations communicate a black colour to the faeces, owing to the formation of the black sulphide, and probably of some little tannate of iron.

FERRUM REDACTUM, reduced iron. Metallic iron, with a variable amount of magnetic oxide of iron (hydrate of per-oxide of iron, granulated zinc, sulphuric acid, and chloride of calcium).

Officinal Preparation.—**TROCHISCI FERRI REDACTI** (reduced iron, refined sugar, gum acacia, mucilage of gum acacia and distilled water). Each lozenge contains 1 grain of reduced iron. *Dose*, 1 to 5 lozenges with a meal.

Therapeutics.—Given when it is desirable to obtain the effect of iron without its astringency. It sometimes causes eructations of sulphuretted hydrogen.

Adulterations.—May contain some sulphide, or the magnetic oxide.

FERRI CARBONAS SACCHARATA, saccharated carbonate of iron (carbonate of iron ($FeCO_3$) mixed with the per-oxide (Fe_2O_3) and sugar (the carbonate forming at least 37 per cent. of the mixture), sulphate of iron, carbonate of ammonia, refined sugar and boiling distilled water). *Dose*, 5 to 20 grains.

Officinal Preparation. — PILULA FERRI CARBONATIS (saccharated carbonate of iron and confection of roses). *Dose*, 5 to 20 grains.

Carbonate of iron is also contained in Mistura Ferri Composita or Griffith's mixture.

Therapeutics. — Possesses the haematinic properties of iron; is not astringent, and scarcely affects the mucous membrane of the alimentary canal.

FERRI IODIDUM, iodide of iron (FeI_2 , with 18 per cent. of water of crystallisation, and a little oxide of iron. (Fine iron wire, iodine and distilled water.) *Dose*, 1 to 5 grains.

Officinal Preparations. — SYRUPUS FERRI IODIDI (iodine, fine iron wire, refined sugar, and distilled water); $4\frac{1}{2}$ grains of the salt to 1 drachm of the syrup. *Dose*, 20 minims to 1 drachm.

PILULA FERRI IODIDI (iodine, fine iron wire, refined sugar, liquorice root and distilled water); 1 grain of the salt in $2\frac{1}{2}$ of the pill mass. *Dose*, $2\frac{1}{2}$ to 8 grains or more.

Therapeutics. — Peculiarly applicable to scrofulous disease. Is given in phthisis in combination with cod-liver oil; occasionally in rheumatic arthritis, especially when the pain is increased by the heat of the bed; and in certain forms of syphilis. The proportion of iron in FeI_2 is only 1 to $4\frac{1}{2}$.

FERRI SULPHAS, sulphate of iron, $\text{FeSO}_4 + 7\text{H}_2\text{O}$ (fine iron wire, sulphuric acid and distilled water). *Dose*, 1 to 5 grains. Is contained in Ferri Sulphas Exsiccata and Pilula Aloës et Ferri; also used in the Mistura Ferri Composita.

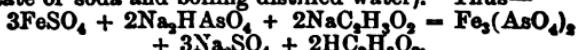
FERRI SULPHAS EXSICCATA, dried sulphate of iron (expose the preceding salt to $400^{\circ}\text{F}.$). *Dose*, $\frac{1}{2}$ to 3 grains.

FERRI SULPHAS GRANULATA, granulated sulphate of iron. (A hot solution of sulphate of iron in rectified spirit, and stirred until the salt separates in minute granular crystals). *Dose*, 1 to 5 grains.

Therapeutics. — The same as the other iron salts, but very astringent. Useful in passive haemorrhage and mucous discharges; in anaemia and relaxation.

Incompatibles. — Forms inks with any preparations containing tannin or gallic acid; these do not cause the loss of medicinal properties, but form unsightly mixtures.

FERRI ARSENIAS, arseniate of iron ($\text{Fe}_3(\text{AsO}_4)_2$), partially oxidised (sulphate of iron, arseniate of soda dried at $300^{\circ}\text{F}.$, acetate of soda and boiling distilled water). Thus—

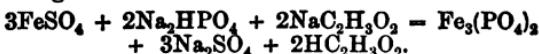


Arseniate of iron, sulphate of soda, and free acetic acid are

formed. The presence of the last substance causes the precipitation of the $\text{Fe}_3(\text{AsO}_4)_2$, which is insoluble in it). *Dose*, $\frac{1}{8}$ to $\frac{1}{2}$ of a grain.

Therapeutics.—Combines the properties of arsenic and iron. Is given in certain skin diseases associated with anaemia.

FERRI PHOSPHAS, phosphate of iron ($\text{Fe}_3(\text{PO}_4)_2$) partially oxidised (sulphate of iron, phosphate of soda, acetate of soda and boiling distilled water. Thus—



Phosphate of iron, sulphate of soda and free acetic acid are formed). *Dose*, 5 to 10 grains.

Officinal Preparation.—**SYRUPUS FERRI PHOSPHATIS** (granulated sulphate of iron, phosphate of soda, acetate of soda, diluted phosphoric acid, refined sugar and distilled water); contains 1 grain of $\text{Fe}_3(\text{PO}_4)_2$ in 1 fluid drachm. *Dose*, 1 fluid drachm.

Therapeutics.—Used in diabetes, and has been recommended for rickets. It is apparently not astringent.

FERRI OXIDUM MAGNETICUM, magnetic oxide of iron (Fe_3O_4) combined with about 20 per cent. of water of hydration, and containing some per-oxide of iron (solution of persulphate of iron, sulphate of iron, solution of soda and distilled water). *Dose*, 5 to 10 grains.

Therapeutics.—The same as of reduced iron. It is cheaper, and probably less effectual.

FERRI PEROXIDUM HYDRATUM, hydrated peroxide of iron ($\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$), (moist peroxide of iron dried at a temperature not exceeding 212°F., until it ceases to lose weight, and then reduced to fine powder).

Officinal Preparation.—**EMPLASTRUM FERRI** (hydrated peroxide of iron, Burgundy pitch, and lead plaster).

Therapeutics.—A non-irritant, and useful when it is desired to give large doses of iron, or to continue its use for a long period. Employed beneficially in neuralgia, etc.

FERRI PEROXIDUM HUMIDUM, moist peroxide of iron (hydrated peroxide of iron, with about 86 per cent. of uncombined water, solution of persulphate of iron, solution of soda and distilled water). *Dose*, $\frac{1}{2}$ to $\frac{1}{3}$ ounce.

Therapeutics.—Not administered internally to produce the effects of iron, but as an antidote in arsenic poisoning, in which it is said to be capable of forming in the stomach an insoluble arsenite or arseniate of iron. It is probable, however, that it merely acts mechanically by enveloping the

poison, and so shielding the stomach from any further action.

FERRI PERCHLORIDI LIQUOR FORTIOR, strong solution of perchloride of iron (iron wire, hydrochloric acid, nitric acid and distilled water). *Dose*, 3 to 10 minims. Used in the preparation of the following:

(1) **LIQUOR FERRI PERCHLORIDI**, solution of perchloride of iron (strong solution of perchloride of iron, 5 ounces; distilled water, 15 ounces). This is of the same strength as the tincture following:

(2) **TINCTURA FERRI PERCHLORIDI**, tincture of perchloride of iron (strong solution of perchloride of iron, 5 ounces; rectified spirit, 15 ounces). *Dose*, 10 to 40 minims or more; the same dose for the liquor.

Therapeutics.—A very powerful preparation of iron, useful in passive haemorrhages and other discharges, and in erysipelas. It is much employed as a blood-restorer.

FERRI PERNITRATIS LIQUOR, solution of pernitrate of iron (iron wire, nitric acid and distilled water). *Dose*, 10 to 40 minims.

Therapeutics.—Powerfully astringent and tonic, and used in the same cases for which the perchloride is prescribed.

FERRI PERSULPHATIS LIQUOR, solution of persulphate of iron (proto-sulphate of iron, sulphuric acid, nitric acid and distilled water, boiled until the persalt is formed). Is used in the preparation of other iron salts, but not given medicinally. Very astringent.

FERRI ET AMMONIÆ CITRAS, citrate of iron and ammonia (solution of persulphate of iron, solution of ammonia, citric acid and distilled water). *Dose*, 5 to 10 grains upwards.

Officinal Preparation.—**VINUM FERRI CITRATIS**, wine of citrate of iron (citrate of iron and ammonia, 160 grains; orange wine, 1 pint). *Dose*, 1 to 2 drachms.

Therapeutics.—Possesses but little astringency, and is very effectual as a blood-restorer. Is well adapted for children, and may be employed when more styptic ferruginous preparations are not well tolerated.

Incompatibles.—Tannin solutions, since these turn black, and caustic alkalies, which precipitate the oxide.

FERRUM TARTARATUM, tartarated iron (solution of persulphate of iron, solution of ammonia, acid tartrate of potash, and distilled water). *Dose*, 5 to 10 grains.

Therapeutics.—Exactly similar in action to the ammonio-citrate.

FERRI ET QUINLÆ CITRAS, citrate of iron and quinine (solu-

tion of persulphate of iron, sulphate of quinia, diluted sulphuric acid, citric acid, solution of ammonia, distilled water).
Dose, 5 to 10 grains.

Therapeutics.—Combines the properties of iron and quinine; must not be given with alkalies, since quinine is precipitated by these.

Adulterations.—Cinchona and deficiency of quinine.

STIBIUM. Antimony. Sb = 122.

All the antimonial preparations of the British Pharmacopœia are taken from the ANTIMONIUM NICRUM, or black sulphide (Sb_2S_3), occurring native as a crystalline metallic powder of a steel-grey colour. From this are prepared :

(1) ANTIMONIUM SULPHURATUM, sulphurated antimony (containing the sulphide of antimony, Sb_2S_3 , with a small and variable amount of the oxide, Sb_2O_3). It is one of the ingredients of Pilula Hydrargyri Subchloridi Composita.

Therapeutics.—This substance is rather uncertain in its action, from its slight solubility ; but it is used for the same purposes as the other preparations of antimony.

(2) ANTIMONIUM TARTARATUM, tartarated antimony, tartar emetic ($KSbC_4H_4O_7$). This is in reality a double tartrate of potash and antimony, and is prepared by the addition of the antimonious oxide (Sb_2O_3) to acid tartrate of potash ($KHC_4H_4O_6$). Thus—



Officinal Preparations:

(1) VINUM ANTIMONIALE (tartarated antimony in sherry). 2 grains of the salt to the ounce.

(2) UNGUENTUM ANTIMONII TARTARATI (tartar emetic, 2 ounces, and simple ointment 1 ounce).

Therapeutics.—In small doses tartar emetic, when internally administered, acts upon the skin and mucous membranes. It is expectorant, diaphoretic, and possibly cholagogue. In larger doses it is at first emetic, then occasionally purgative ; if continued for some time a powerful sedative effect is produced upon the vascular system and in all the muscles. *Externally* it is powerfully irritant, producing pustules resembling those of small-pox, and there is danger of its becoming absorbed, especially in young children. It is employed in febrile conditions to promote secretions, and as a vascular depressant in severe inflammations.

Dose, as a diaphoretic and expectorant, $\frac{1}{8}$ to $\frac{1}{2}$ of a grain.

„ as a vascular depressant and sedative, $\frac{1}{8}$ to 1 grain.

„ as an emetic, 1 to 3 grains.

Incompatibles.—Acids, alkalies and their carbonates, lime, lead and astringent vegetable infusions.

Adulterations.—Cream of tartar and iron.

ANTIMONII OXIDUM.—Antimonious oxide (Sb_2O_3) is prepared from the terchloride ($SbCl_3$) by the addition of carbonate of soda (Na_2CO_3). *Dose*, 1 to 5 grains.

Officinal Preparation.—**PULVIS ANTIMONIALIS** (oxide of antimony, 1 ounce; and phosphate of lime, 2 ounces). *Dose*, 3 to 15 grains.

Therapeutics.—Analogous to tartar emetic, but much less active in its operation; dissolves slowly in the stomach, and is less likely on that account to cause irritation.

ANTIMONII CHLORIDI LIQUOR (tersulphide of antimony dissolved slowly in hydrochloric acid).

Therapeutics.—Powerfully caustic and escharotic; sometimes applied to cancerous growths and poisoned wounds, bites of snakes, etc. It is never used internally.

BISMUTHUM. Bismuth. Bi = 210.

BISMUTHUM PURIFICATUM, purified bismuth (bismuth, 10 ounces; nitrate of potash in powder, 2 ounces).

BISMUTHI SUBNITRAS, subnitrate of bismuth ($BiNO_4 + H_2O$) (purified bismuth, nitric acid and distilled water). *Dose*, 5 to 20 grains in powder, or suspended by means of mucilage of tragacanth or gum arabic.

Officinal Preparation.—**TROCHISCI BISMUTHI** (subnitrate of bismuth, carbonate of magnesia, precipitated carbonate of lime, refined sugar, gum acacia, mucilage of gum acacia and rose water). Each lozenge contains 2 grains of the salt of bismuth.

Therapeutics.—When taken internally, acts as a direct sedative upon the mucous membrane of the stomach and intestines. It is largely used in the treatment of irritative dyspepsia, especially when pyrosis or water-brash is a prominent symptom. May be given in chronic vomiting. It has been stated to be valuable in checking the diarrhoea of phthisis. Externally it is used as a topical sedative in affections of the skin, and as an injection in gleet and leucorrhœa. Has been largely used as a cosmetic for giving the peculiar whiteness to the complexion termed enamelling.

Adulterations.—Carbonate of lead, and occasionally arsenic.

LIQUOR BISMUTHI ET AMMONIÆ CITRATIS, solution of citrate of bismuth and ammonia (purified bismuth, nitric acid, citric acid, solution of ammonia and distilled water). *Dose*, $\frac{1}{2}$ to 1 drachm.

Therapeutics.—Appears to act like the subnitrate, and is considered by some authors to be more powerful on account of the more soluble condition of the metal.

BISMUTHI CARBONAS, carbonate of bismuth ($2(\text{Bi}_2\text{CO}_5 + \text{H}_2\text{O})$, (purified bismuth, nitric acid, carbonate of ammonia and distilled water). *Dose*, 5 to 20 grains.

Therapeutics.—Acts probably in the same manner as the subnitrate.

BISMUTHI OXIDUM, oxide of bismuth (Bi_2O_3), (subnitrate of bismuth and solution of soda). *Dose*, 5 to 15 grains.

Therapeutics.—Similar to the other preparations of bismuth.

PLUMBUM. Lead. Pb = 207.

PLUMBI OXIDUM, oxide of lead (PbO), (made during the cupellation of lead ores containing silver, the oxide becoming semi-vitrified or fused).

Officinal Preparation.—EMPLASTRUM PLUMBI, lead plaster (oxide of lead, olive-oil, and water).

Therapeutics.—Never given internally. The plaster, in which the lead is combined with oleic and margaric acid, is used as a mechanical support.

PLUMBI IODIDUM, iodide of lead (PbI_2), (nitrate of lead, iodide of potassium and distilled water). *Dose*, $\frac{1}{2}$ to 1 grain or more.

Officinal Preparations.—(1) EMPLASTRUM PLUMBI IODIDI, iodide of lead plaster (iodide of lead, soap and resin plaster).

(2) UNGUENTUM PLUMBI IODIDI, iodide of lead ointment (iodide of lead, and simple ointment).

Therapeutics.—Externally acts as a mild stimulant, and has been used as the plaster or ointment for scrofulous enlargement of joints. By long continued use the metal may become absorbed. It is occasionally used internally, but has no advantage over other iodides in the treatment of scrofulous tumours.

PLUMBI ACETAS, acetate of lead ($\text{Pb}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 3\text{H}_2\text{O}$) (oxide of lead, acetic acid and distilled water). *Dose*, 1 to 4 grains.

Officinal Preparations.—(1) PILULA PLUMBI CUM OPIO, pill of lead and opium (acetate of lead, opium, and confection of roses). 1 grain of opium is contained in 8 grains of the pill mass. *Dose*, 4 to 8 grains.

(2) SUPPOSITORIA PLUMBI COMPOSITA, compound lead suppositories (acetate of lead, opium, benzoated lard, white wax, and oil of theobroma).

(3) UNGUENTUM PLUMBI ACETATIS, ointment of acetate of lead (acetate of lead and benzoated lard).

Therapeutics of the Lead Salts.—In small doses acetate of lead is sedative and astringent, diminishing morbid mucous discharges and haemorrhages, and even the natural secretions. It induces constipation, thirst, and the well-known painters' colic, accompanied by the blue line round the gums. When long continued, wasting of the body is induced, the nervous system is affected, neuralgic pains occur in the limbs, and eventually the extensors of the hand lose their power (dropped wrist). Apoplexy, and sometimes complete paralysis supervene. Anæmia is one of the marked effects of the use of acetate of lead and other lead preparations. From the prevalence of gout in painters and plumbers, it would appear that lead, when taken for any long period, causes impregnation of the blood with uric acid. The above serious symptoms are usually produced by contact with lead, either by the nature of the occupation or by drinking water containing the metal ; but acetate of lead is employed medicinally to check haemorrhages, for the treatment of diarrhoea and dysentery, and to lessen the expectoration and excessive sweatings of phthisis.

LIQUOR PLUMBI SUBACETATIS, solution of sub-acetate of lead ($Pb(C_2H_3O_2)_2PbO$), (acetate of lead, oxide of lead and distilled water).

Officinal Preparations.—(1) LIQUOR PLUMBI SUBACETATIS DILUTUS, diluted solution of subacetate of lead (solution of subacetate of lead, rectified spirit and distilled water). This is usually known as Goulard water.

(2) UNGUENTUM PLUMBI SUBACETATIS COMPOSITUM, compound ointment of subacetate of lead (solution of subacetate of lead, camphor, white lead and oil of almonds).

Therapeutics.—An astringent and sedative ; only used externally. The dilute solution is generally used when the topical action of lead is required.

PLUMBI CARBONAS, carbonate of lead ($Pb_2CO_3, PbO ?$). (By the exposure of sheets of metallic lead to acetic and carbonic acid fumes from vinegar and spent tan.)

Officinal Preparation.—UNGUENTUM PLUMBI CARBONATIS, ointment of carbonate of lead (carbonate of lead and simple ointment).

Therapeutics.—Not used internally. Applied externally it acts as a local astringent and sedative, and is used in a similar manner to the subacetate. May be powdered upon diseased surfaces, either alone or mixed with starch.

PLUMBI NITRAS, nitrate of lead ($\text{Pb}(\text{NO}_3)_2$), (lead and nitric acid slightly diluted the result being crystallised out). This salt is employed in the preparation of the iodide of lead.

CUPRUM. Copper. Cu - 63·5.

FINE COPPER WIRE.—Used in the preparation of cupri sulphas and spiritus ætheris nitrosi.

CUPRI SULPHAS, sulphate of copper ($\text{CuSO}_4 + 5\text{H}_2\text{O}$). (By heating sulphuric acid and copper together, dissolving the soluble product in hot water and evaporating the solution until crystallisation takes place on cooling.) *Dose*, as an *astringent*, $\frac{1}{2}$ to 2 grains; as an *emetic*, 5 to 10 grains; *externally*, 1 to 10 grains or more to a fluid ounce of water.

Therapeutics.—In small doses internally an astringent to the alimentary canal; suitable for obstinate diarrhoea and dysentery; after absorption, a tonic to the nervous system, and employed in chorea and epilepsy.

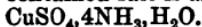
In large doses a quick, powerful emetic, given in some cases of narcotic poisoning, but its use is open to objection. Externally it may be applied, in the form of powder or in strong solution, to extensive granulations and ulcers, or in weaker solution to diminish the excessive secretions from mucous membranes in gleet and ophthalmia.

Adulterations.—The commercial salt may contain sulphate of iron; sulphate of zinc is sometimes a fraudulent addition.

ANHYDROUS SULPHATE OF COPPER (CuSO_4), (the sulphate deprived of its water by a heat of 400°F). Used as a test.

SOLUTION OF AMMONIO-SULPHATE OF COPPER, sulphate of copper, solution of ammonia and distilled water. Merely introduced as a test for the qualitative analysis of liquor ammoniae fortior.

The formula of the contained salt is as follows :



SUBACETATE OF COPPER OF COMMERCE.—Verdigris (Ærugo) ($(\text{C}_2\text{H}_5\text{O}_2)_2\text{Cu}, \text{CuO}$), (copper plates exposed to the action of the fermenting marc of grapes, or pyroligneous acid, the salt forming on the surface).

Therapeutics.—Verdigris is occasionally applied externally as an escharotic, either in powder, mixed with vinegar or honey, or under the title of Linimentum Æruginis .

Adulteration.—Sometimes contains chalk and sulphate of copper.

HYDRARGYRUM. Mercury. Hg - 200.

Chiefly obtained from the native sulphide, cinnabar, by distillation with iron.

Officinal Preparations.—Liquid mercury is seldom used in medicine, but some of its preparations are valuable from the presence of mercury in a finely-divided condition.

(1) HYDRARGYRUM CUM CRETA, mercury with chalk (mercury, 1 ounce ; prepared chalk, 2 ounces, rubbed together until metallic globules are no longer visible, and the mixture acquires a uniform grey colour). *Dose*, 3 to 8 grains.

(2) PILULA HYDRARGYRI, mercurial pill or blue pill (mercury, confection of roses, and powdered liquorice root). *Dose*, 3 to 8 grains.

(3) EMPLASTRUM HYDRARGYRI, mercurial plaster (mercury, olive-oil, sulphur and lead plaster).

(4) EMPLASTRUM AMMONIACI CUM HYDRARGYRO, ammoniac and mercury plaster (ammoniacum, mercury, olive-oil and sulphur).

(5) UNGUENTUM HYDRARGYRI, mercurial ointment ; blue ointment (mercury, prepared lard, and prepared suet).

(6) UNGUENTUM HYDRARGYRI COMPOSITUM, compound mercury ointment (ointment of mercury, yellow wax, olive-oil and camphor).

(7) LINIMENTUM HYDRARGYRI, liniment of mercury (mercurial ointment, solution of ammonia and liniment of camphor).

(8) SUPPOSITORIA HYDRARGYRI, mercurial suppositories (ointment of mercury, benzoated lard, white wax and oil of theobroma).

Therapeutics of the MERCURIAL SALTS IN GENERAL :

Mercury, when taken into the stomach in a liquid form, appears to exert no influence upon the economy, and even pounds have been swallowed without inducing any particular symptoms ; but occasionally, in consequence of partial oxidation and absorption, the full effects of the metal have ensued. The vapour of mercury acts very energetically, and when taken internally, or when rubbed upon the surface of the body, in a fine state of division, the same results are observed. In small doses mercurials increase the various secretions, and hence they are said to be sialagogue, cholagogue, diuretic and emmenagogue. They also promote the absorption of morbid fluids by increasing the activity of the absorbent system and preventing deposition. However administered, mercury becomes absorbed into the blood, and may be found in milk, saliva, sweat, urine, bile, pus from ulcers, and in various tissues, as bone, synovial and serous membranes, brain, lungs, and cellular tissue. If administered internally for some time, the red globules of the blood are diminished in quantity, and

anaemia is produced. Internally mercurials are employed in the following diseases :

(1) In *internal congestions*, as of the liver and kidneys ; increasing their secretion and relieving their vessels.

(2) In *acute and chronic inflammations*. More useful in inflammation of serous than of mucous membranes, but mercury is hurtful in scrofulous and erythematous inflammation, and in all inflammatory actions of a low type.

(3) In *acute rheumatism* ; their utility in this affection is doubtful.

(4) In *dropesies arising from inflammation of serous membranes and disease of the liver* ; but injurious when dependent upon chronic diseases of the kidney.

(5) In *syphilis*. (6) Externally, as the ointment and plaster, a topical stimulant action is produced, the metal becoming absorbed and affecting the system generally. These preparations are used over chronically inflamed and indurated parts, and occasionally to introduce the mineral into the system by "inunction."

The pulvis hydrargyri & creta is one of the mildest forms of employing mercury. It exerts a very slight influence upon the mucous membrane, and may be used in such irritable conditions of the intestines as diarrhoea. The pilula hydrargyri is also comparatively unirritating. The external applications—the blue and compound ointments—cause but little local action, and their employment is useful in inducing the constitutional effects of mercury through the agency of the skin. The mercurial plaster and suppository also produce the local effect of the mineral.

Effects of excessive action, or over doses of mercurials :

Profuse ptalism, swelling of the salivary glands and the tongue, redness and swelling of the gums, ulceration of the mucous membrane of the mouth, loosening of the teeth and necrosis of the jaw, excessive purging, with bilious stools, the eczema mercuriale, inflammation of the bone (ostitis) and periosteum (periostitis), mercurial erythema, i.e., a low febrile condition, accompanied by intense prostration, neuralgic pains, the tremor mercurialis, partial and sometimes complete paralysis and death. These symptoms are usually observed in those who are exposed to the action of the vapour of mercury.

Circumstances which modify the action of mercurials :

Age ; children tolerate the drug much better than adults. Acute inflammation resists the action of mercurials, whereas

in kidney disease, scrofula and scurvy, the constitution is very sensitive to mercury.

HYDRARGYRI SUBCHLORIDUM, subchloride of mercury, calomel ($HgCl$), (sulphate of mercury, mercury, and chloride of sodium).

Officinal Preparations.—(1) **LOTIO HYDRARGYRI NIGRA**, black mercurial lotion (calomel and lime-water); 3 grains to the ounce.

(2) **PILULA HYDRARGYRI SUBCHLORIDI COMPOSITA**, compound pill of subchloride of mercury (calomel, sulphurated antimony, guaiacum resin, and castor oil). *Dose*, 5 to 10 grains.

(3) **UNGENTUM HYDRARGYRI SUBCHLORIDI**, ointment of subchloride of mercury (calomel and prepared lard).

Therapeutics.—Calomel produces little local irritation. It increases the secretion of bile and other intestinal fluids, and hence may be given as an adjunct in liver diseases, and in cases of obstruction to the portal circulation. Produces in children the so-called "calomel-stools," or greenish-coloured faeces.

Dose, as a purge, 2 to 5 grains. To affect the system, $\frac{1}{2}$ to 1 grain or more. It should not be given with alkaline carbonates, since there is a possibility of the formation of the per-chloride of mercury.

Adulterations.—Perchloride of mercury, formed in its preparation, and intentional impurities, as sulphate and carbonate of baryta.

HYDRARGYRI PERCHLORIDUM, perchloride of mercury, corrosive sublimate ($HgCl_2$), (sulphate of mercury, chloride of sodium and black oxide of manganese, the last being added in order to generate with the excess of common salt some free chlorine, which prevents the formation of calomel from the subsulphate of mercury, which the sulphate of mercury sometimes contains).

Officinal Preparations.—(1) **LIQUOR HYDRARGYRI PERCHLORIDI**, solution of perchloride of mercury (perchloride of mercury, chloride of ammonium and distilled water). $\frac{1}{2}$ grain of the mercurial salt to the ounce of the liquor. *Dose*, $\frac{1}{2}$ to 2 fluid drachms.

(2) **LOTIO HYDRARGYRI FLAVA**, yellow mercurial lotion (perchloride of mercury and solution of lime). 18 grains to the ounce.

Therapeutics.—A powerful irritant. In large doses causes burning pain at the epigastrium, with vomiting and purging. In very small doses it is an alterative, useful in chronic affections, syphilitic or otherwise, in the scaly skin affections (squamæ), and in periosteal affections. Externally, $HgCl_2$ is

employed as a lotion, injection, gargle, or ointment, in chronic skin diseases, ulcerated sore throats, and chronic discharges from the mucous membranes. Dose, $\frac{1}{8}$ to $\frac{1}{4}$ grain in solution, or in pill with crumb of bread.

Incompatibles.—Preparations containing albumen or tannin. It is also thrown down by alkalies, alkaline sulphides, iodides, and tartar emetic.

HYDRARGYRUM AMMONIATUM, ammoniated mercury (NH_3HgCl), (perchloride of mercury, solution of ammonia and distilled water).

Officinal Preparations.—(1) **UNGUENTUM HYDRARGYRI AMONIATI**, ointment of ammoniated mercury (ammoniated mercury, 62 grains; simple ointment, 1 ounce).

Therapeutics.—Never employed internally. Used externally for destroying pediculi, and as a stimulant application to chronic skin affections.

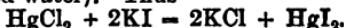
Adulterations.—Chalk, carbonate of lead, plaster of Paris, etc.

HYDRARGYRI IODIDUM VIRIDE, green iodide of mercury (HgI_3), (mercury and iodine rubbed together, rectified spirit being added to assist pulverisation and prevent detonation).

Therapeutics.—Similar to calomel, but less purgative, and more readily affecting the system. Externally alterative, and useful in chronic skin diseases. Dose, 1 to 3 grains.

Adulterations.—May contain a little red iodide.

HYDRARGYRI IODIDUM RUBRUM, red iodide of mercury (HgI_2), (perchloride of mercury, iodide of potassium and boiling distilled water). Thus—



Perchloride of mercury and iodide of potassium yield chloride of potassium and periodide of mercury. Dose, $\frac{1}{8}$ to $\frac{1}{4}$ of a grain.

Officinal Preparations.—(1) **UNGUENTUM HYDRARGYRI IODIDI RUBRI**, ointment of red iodide of mercury. 16 grains to the ounce.

Therapeutics.—Closely resembles corrosive sublimate. Chiefly used externally for enlarged glands and syphilitic and periosteal nodes, and in goitre. Internally, in the same cases as corrosive sublimate.

HYDRARGYRI OXIDUM RUBRUM, red oxide of mercury (HgO), (mercury, nitric acid and water).

Officinal Preparation.—**UNGUENTUM HYDRARGYRI OXIDI RUBRI** (red oxide of mercury, yellow wax and oil of almonds). 1 grain in 8.

Therapeutics.—Only used externally. Applied to the eyes

in ophthalmia, and to indolent ulcers in the form of ointment. In powder it is escharotic, and may be used alone, or mixed with sugar, to specks in the cornea, over chancres, excrescences, and fungoid ulcers.

Adulterations.—Brick-dust, red lead and other red powders.

HYDRARGYRI OXIDUM FLAVUM, yellow oxide of mercury (perchloride of mercury, solution of soda and distilled water). This is really the same as the red oxide, but is inserted in the appendix of the "British Pharmacopeia."

HYDRARGYRI NITRATIS LIQUOR ACIDUS, acid solution of nitrate of mercury (mercury, nitric acid and distilled water).

Officinal Preparation.—**UNGUENTUM HYDRARGYRI NITRATIS**, ointment of nitrate of mercury (mercury, nitric acid, prepared lard and olive-oil).

Therapeutics.—Never used internally. It is powerfully caustic. The ointment is stimulant, and, when diluted, is exceedingly useful in eye affections, as tinea tarsi, and in some skin diseases.

HYDRARGYRI SULPHAS, sulphate of mercury ($HgSO_4$) (mercury, sulphuric acid and heat). Merely used for the preparation of calomel and corrosive sublimate. Is never used internally.

ARGENTUM. Silver. Ag — 108.

ARGENTUM PURIFICATUM.—Purified silver, used for coating pills.

ARGENTI NITRAS, nitrate of silver ($AgNO_3$), (refined silver, nitric acid and distilled water). Used in the preparation of oxide of silver. *Dose*, $\frac{1}{2}$ to $\frac{1}{4}$ of a grain in the form of a pill.

Incompatibles.—Distilled water must always be used with it, since water in the natural state will cause a white precipitate of the carbonate of silver. It decomposes almost all vegetable infusions.

Therapeutics.—Externally it is astringent, irritant, and vesicant, and is used with great advantage for poisoned wounds and ulcers, venereal or otherwise, pustules and erysipelas. It destroys warts, chancres, morbid growths, etc. Internally, in small doses, nitrate of silver is astringent, and alterative to the mucous membrane of the stomach and intestines. It is also tonic, and is sometimes administered in chronic gastric affections, gastrodynna, pyrosis and vomiting, or even in malignant and organic diseases of the stomach. It enjoys much repute on the Continent for the treatment of epilepsy and chorea; but its internal use must not be of

long continuance, since it may communicate to the skin a permanent leaden hue.

Adulterations.—May contain copper or lead, or, in a fused form, nitrate of potash.

ARGENTI OXIDUM, oxide of silver (Ag_2O), (solution of lime, nitrate of silver and distilled water). An olive-brown powder. *Dose*, $\frac{1}{2}$ to 2 grains in a pill.

Incompatibles.—Decomposes many organic substances, and is particularly incompatible with creosote, with which it forms a substance prone to spontaneous combustion.

Therapeutics.—Similar to the nitrate, only that the topical action is slight. May be given as a nervine tonic, and in dyspepsia.

AURUM. Gold. Au = 197.

Fine gold, in mass or leaf.

Therapeutics.—Gold in very fine division as **PULVIS AURI**, and in the forms of the **CHLORIDE** and **TRIOXIDE**, has been sometimes employed medicinally. Its action is apparently similar to that of mercury. It has been chiefly used in the treatment of scrofulous and venereal affections. The most common preparation used is the **DOUBLE CHLORIDE OF GOLD AND SODIUM** ($\text{NaCl}, \text{AuCl}_3 + 2\text{H}_2\text{O}$). *Dose*, of powdered gold, $\frac{1}{2}$ to 1 grain; of the trioxide (Au_2O_3), $\frac{1}{16}$ of a grain upwards; of the trichloride (AuCl_3), or the auro-chloride of sodium, $\frac{1}{32}$ of a grain upwards. The chloride in large doses is excessively poisonous, acting in a similar manner to corrosive sublimate.

CERIUM. Ce = 92.

CERII OXALAS, oxalate of cerium ($\text{CeC}_2\text{O}_4 + 3\text{H}_2\text{O}$), (a salt which may be obtained as a precipitate by adding a solution of oxalate of ammonia to a soluble salt of cerium). *Dose*, 1 to 2 grains.

Therapeutics.—Appears to act as a local sedative, and subsequently upon the general system as a nervine tonic. It has been used in gastralgia, pyrosis and vomiting, in the same way as subnitrate of bismuth and nitrate of silver. Has enjoyed much repute in the vomiting of early pregnancy and in sea-sickness, and is also given in epilepsy and chorea, in nervous palpitations and convulsive coughs.

APPENDIX.

ALCOHOLIC AND ETHEREAL PREPARATIONS, ETC.

ALCOHOL. Absolute Alcohol. C_2H_6O .

Obtained from rectified spirit, carbonate of potash and slaked lime. Specific gravity, 0·795.

Use.—Never administered as a medicine. Is used as a solvent, and as a test for the purity of some chemical substances.

SPIRITUS RECTIFICATUS ($C_2H_6O + 16H_2O$) rectified spirit consists of alcohol, with 16 per cent. of water; obtained by the distillation of fermented saccharine substances. Contains 84 per cent. of absolute alcohol. Specific gravity, 0·838.

SPIRITUS TENUIOR, proof spirit; prepared by the addition of 3 parts of distilled water to 5 parts of rectified spirit. Contains 49 per cent. of alcohol. Specific gravity, 0·920.

Use.—Rectified spirit is employed in pharmacy, in the preparation of many tinctures and spirits, when the substances contain a large amount of resin or volatile oil. Proof spirit is used when these principles are not abundant.

Therapeutics.—Sometimes used as an application to sore nipples.

SPIRITUS VINI GALLICI, brandy. Spirit distilled from French wines. Contains 53 per cent. of alcohol, volatile oil and cenanthic ether. It is white when first distilled, but in the cask it generally acquires a light sherry colour; burnt sugar is often added to produce the same effect.

Officinal Preparation.—MISTURA SPIRITUS VINI GALLICI (spirit of French wine, cinnamon water, yolk of eggs and refined sugar).

Therapeutics.—A powerful diffusible stimulant, given in syncope, typhus and typhoid fever, etc.

VINUM XERICUM, sherry, a Spanish wine. Contains usually from 17 to 18 per cent of alcohol, colouring matters, cenanthic ether, bitartrate of potash, malates, and sugar.

Sherry is used in making most of the wines of the Pharmacopeia, as—

VINUM ALOES.

„ ANTIMONIALE.
„ COLCHICI.
„ FERRI.

VINUM IPECACUANHÆ.

„ OPIL.
„ RHEI.

Cape and other white wines are often substituted for sherry.

Therapeutics.—Much the same as brandy, but less powerful.

VINUM AURANTII.—Orange wine; made in Britain by the fermentation of a saccharine solution, to which the fresh peel of the bitter orange has been added. Contains 12 per cent. of alcohol.

Officinal Preparations.—VINUM FERRI CITRATIS and VINUM QUINÆ.

CEREVISIÆ FERMENTUM. Beer yeast.

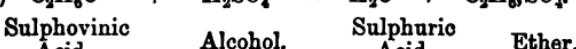
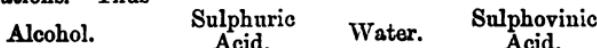
The ferment obtained in the brewing of beer. *Dose*, $\frac{1}{2}$ to 1 ounce.

Officinal Preparation.—CATAPLASMA FERMENTI, yeast poultice (beer yeast, wheaten flour, and water to 100°F).

Therapeutics.—Externally applied, it is stimulant and anti-septic, and is used for indolent ulcers. Internally it has been given in low states of the system. It has been said to prevent the formation of boils and carbuncles.

ÆTHER ($(\text{C}_2\text{H}_5)_2\text{O}$). Sulphuric Ether.

A volatile liquid obtained from alcohol, and containing not less than 92 per cent. by volume of pure ether. It is prepared from the following ingredients, viz.: rectified spirit, sulphuric acid, chloride of calcium and distilled water. The preparation may, however, be represented in the following equations. Thus—



The above is called the *Continuous Etherification Process*, since during the operation the sulphovinic acid is being constantly formed and decomposed, and thus a continuous supply of ether is produced.

Dose, 20 minims to 1 drachm.

SPIRITUS ETHERIS.—Ether, 10 ounces, and rectified spirit, 1 pint. Specific gravity, 0·809. *Dose*, $\frac{1}{2}$ drachm to 1 drachm.

Use.—Ether is used for preparing the ether purus, and for making collodion and the epispastic solution. Spirit of ether is employed in making the ethereal tincture of lobelia.

Therapeutics.—A powerful diffusible stimulant, used to correct flatulency, and for allaying pain and cramp in the stomach, and to diminish spasm in spasmodic asthma, angina pectoris and hysteria. When applied externally it produces cold by its rapid evaporation, and is employed in the reduction of hernia. In the form of vapour its action is anaesthetic and not unlike chloroform.

ÆTHER PURUS. Pure Ether ($(C_2H_5)_2O$).

Ether, freed from alcohol and water, is prepared by washing ether with water, and digesting for 24 hours with recently-burnt lime and chloride of calcium, and distilling at a gentle heat. The specific gravity should not exceed 0·720. It is a powerful solvent of fixed and volatile oils, resins, some alkaloids, gun-cotton, iodine, bromine, perchloride of mercury, etc.

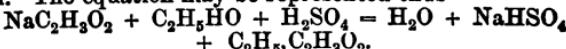
Adulterations.—May contain alcohol, which increases the specific gravity and causes it to coagulate the serum of the blood. It may also contain water and sulphurous anhydride, adding to its weight and giving it an acid reaction.

SPIRITUS ÆTHERIS NITROSI, spirit of nitrous ether. This contains nitrite of ethyl ($C_2H_5NO_2$). Prepared from nitric acid, sulphuric acid, copper in fine wire and rectified spirit. By the action of the nitric acid upon the copper wire nitrous acid is generated, and this, uniting with the ether given off by the action of the sulphuric acid upon the rectified spirit, produces the nitrite of ethyl. *Dose*, $\frac{1}{2}$ drachm to 2 drachms.

Therapeutics.—A stimulant, diaphoretic and diuretic. Used in dropsies and in slight febrile affections.

Adulteration.—Excess of acid, from being kept too long or being improperly prepared.

ÆTHER ACETICUS, acetic ether ($C_2H_5C_2H_3O_2$), (acetate of ethyl). Obtained by distilling the dry acetate of soda ($NaC_2H_3O_2$) with rectified spirit (C_2H_5HO) and sulphuric acid (H_2SO_4), then adding chloride of calcium, allowing the mixture to stand for 24 hours, and finally decanting the ethereal fluid. The equation may be represented thus—



Water, bisulphate of soda and acetic ether are formed.

Therapeutics.—A stimulant and anti-spasmodic, like sulphuric ether, only less powerful. *Dose*, 20 to 60 minims.

CHLOROFORMUM. Chloroform. CHCl_3 .

This has also been termed terchloride of formyl. It is prepared from chlorinated lime, rectified spirit, slaked lime, water, sulphuric acid, chloride of calcium and distilled water. During this process two strata are formed, the lower of which is crude chloroform, and this is purified by redistillation.

When exposed to air and light, CHCl_3 is apt to decompose into hydrochloric acid and free chlorine. It is also decomposed by fixed alkalies. Specific gravity, from 1·48 to 1·496. *Dose*, 1 minim to 10 minims.

Officinal Preparation.—(1) **AQUA CHLOROFORMI**, chloroform water (1 drachm of chloroform to 25 ounces of distilled water).

(2) **LINIMENTUM CHLOROFORMI**, liniment of chloroform (chloroform and camphor liniment.)

(3) **SPIRITUS CHLOROFORMI** (chloroform, 1 fluid ounce; rectified spirit, 19 fluid ounces). *Dose*, 10 minims to 30 minims. Specific gravity, 0·871.

(4) **TINCTURA CHLOROFORMI COMPOSITA**, compound tincture of chloroform (chloroform, 2 fluid ounces; rectified spirit, 8 fluid ounces; and compound tincture of cardamoms, 10 fluid ounces). *Dose*, 20 to 60 minims.

Therapeutics.—Internally, in small doses, chloroform is sedative and antispasmodic. In large doses it produces great diminution of the power of sense, there being no exhilaration or acceleration of the pulse. It is employed in spasmodic cough, asthma, chorea, lead colic and hysteria. Externally it is applied to allay pain in neuralgia and itching in skin affections. Inhaled in small doses it is slightly inebriant, impairing vision and common sensibility, consciousness remaining. The sensations are often said to be pleasurable at first, but if inhalation be continued a dreamy condition is induced, and subsequently there is loss of voluntary motion, the eyes incline upwards, the mental faculties are suspended, the muscles are slightly contracted and the limbs rigid. At length there is complete relaxation of the voluntary muscles, the respiration continues with slight stertorous breathing. The iris is insensible to light, and moderately contracted. Inhalation of the vapour is made use of in tetanus, hydrophobia, colic, during the passage of gall stones and renal calculi. The dangerous indications are syncope and apnoea. Chloroform may be detected in the blood by passing the vapour from this fluid through a red-hot tube; it is then de-

composed into hydrochloric acid and free chlorine, which may be allowed to act either upon nitrate of silver, forming the white chloride of silver soluble in liquor ammoniae, or upon starch paper soaked in a solution of iodide of potassium, when the blue iodide of starch will be developed.

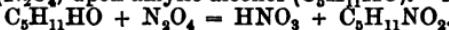
Adulterations.—Hydrochloric acid and free chlorine, and sometimes oily matters formed during the preparation.

ALCOHOL AMYLCUM. Amylic Alcohol. Fousel Oil.
($C_5H_{12}O$)

This is also called hydroxide of amyl ($C_5H_{11}HO$). Specific gravity, 0·818. It is an oily liquid contained in the crude spirit produced by the fermentation of saccharine solutions with yeast, and is separated in the distillation of such crude spirit. By oxidation $C_5H_{12}O$ is converted into *Valerianic Acid* ($C_5H_{10}O_2$), which is employed in the preparation of Soda VALERIANAS, valerianate of soda.

AMYL NITRIS. Nitrite of Amyl. $C_5H_{11}NO_2$.

This is an ethereal liquid, with a peculiar odour and yellowish colour. It is produced by the action of nitrous vapours (N_2O_4) upon amylic alcohol ($C_5H_{11}HO$). Thus—



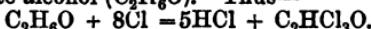
Nitric acid and amyl nitrite are formed.

Dose, by inhalation, 2 to 5 minims, on lint; internally, $\frac{1}{2}$ to 5 minims, dissolved in rectified spirit.

Therapeutics.—When inhaled a great and rapid fall of blood-pressure is caused, the action of the heart being increased. If continued, suffocation, convulsions, and death may follow. Sugar is found in the urine several hours after the vapour has been administered. This substance has been inhaled with good effect in cases of angina pectoris, in spasmodic asthma, and several forms of neuralgia. It should be given cautiously, especially in those old persons whose vessels are rigid.

CHLORAL HYDRAS. Hydrate of Chloral. $C_2HCl_3O.H_2O$.

CHLORAL is produced by the action of dry chlorine gas (Cl) upon absolute alcohol (C_2H_6O). Thus—

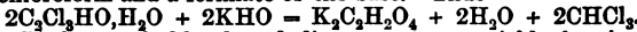


It is then purified by treatment, first with sulphuric acid, and afterwards with lime, and finally converted into the solid hydrate by the addition of water. *Dose*, 5 to 30 grains.

Officinal Preparation.—SYRUPUS CHLORAL (hydrate of chloral, 80 grains; distilled water, 4 fluid drachms; and simple syrup, 4 fluid drachms): 10 grains of chloral in 1 fluid drachm. *Dose*, $\frac{1}{2}$ fluid drachm to 2 fluid drachms.

Therapeutics.—Chloral induces natural sleep; but it is far

inferior as an anodyne to opium and morphia. It is very valuable in the treatment of delirium tremens, acute mania, and severe chorea ; and it may be beneficially employed to relax the spasms in tetanus and strychnia poisoning. In young children, anaemic patients, and in some stages of continued fever, where opium is inadmissible, chloral has been found of great service ; and much relief has been obtained from its administration in cases of asthma and whooping cough, and in the sweating and nocturnal sleeplessness of phthisis. Dangerous symptoms of cardiac depression are at times occasioned by a full dose of this drug. Syncope and death may follow giddiness, sickness and delirium, with a weak and irregular pulse. Considerable excitement may be caused if sleep has not been produced, and an eruption of urticaria is sometimes observed. Profound melancholy, feebleness of the will, with langour and debility, are some of the evils ensuing from the habitual use of chloral. The nauseous taste may be disguised by syrup of tolu, or syrup of orange-peel. Alkalies decompose hydrate of chloral into chloroform and a formiate of the base. Thus—



Hydrate of chloral and liquor potassæ yield formiate of potash, water, and chloroform.

' CREOSOTUM. Creosote or Kreosote.

A product of the distillation of wood tar. *Dose*, 1 to 3 minimis in a pill ; as a gargle, $\frac{1}{2}$ drachm to 1 ounce of water.

Officinal Preparations.—MISTURA CREOSOTI, creosote mixture (creosote, glacial acetic acid, spirit of juniper, syrup and distilled water ; 1 minim in 1 ounce of the mixture). *Dose*, $\frac{1}{2}$ to 3 drachms.

UNGMENTUM CREOSOTI (creosote and simple ointment).

VAPOR CREOSOTI, inhalation of creosote (creosote, 12 minimis, and boiling water, 8 ounces).

Therapeutics.—Internally, in small doses, creosote is a stimulant to the stomach. It has been used in certain forms of vomiting, and sometimes in diarrhoea ; in toothache dependent upon caries ; as a local application to ulcers and chronic skin disorders ; as a topical styptic in haemorrhages, and as a gargle in mercurial salivation. The vapour is useful in chronic bronchitis with excessive expectoration, and for correcting the fetor of the sputa in dilatation of the bronchi, and in pulmonary abscess and gangrene.

Incompatibles.—When mixed with the oxide of silver, heat is given off, and even flame is produced.

ACIDUM CARBOLICUM. Carbolic or Phenic Acid.
 $\text{HC}_6\text{H}_5\text{O}$.

This is obtained from coal-tar oil by fractional distillation and subsequent purification. It occurs in colourless acicular crystals, which readily absorb moisture on exposure to the air. It is but slightly soluble in water, but very soluble in alcohol, ether and glycerine. *Dose*, 1 to 3 grains.

Tests. (1) Coagulates albumen.

(2) Does not reddens blue litmus paper.

(3) Gives a violet colour with a solution of the perchloride of iron, varying in intensity with the strength of the reagents.

(4) A slip of deal dipped into carbolic acid, and afterwards into nitric or hydrochloric acid, acquires (upon drying) a greenish-blue colour.

Officinal Preparations. — GLYCERINUM ACIDI CARBOLICI, glycerine of carbolic acid (4 ounces of glycerine to 1 ounce of carbolic acid).

SUPPOSITORIA ACIDI CARBOLICI ē SAPONE, carbolic acid suppositories (carbolic acid, curd soap and starch).

Therapeutics. — Carbolic acid acts upon the skin and other parts as a powerful stimulant, and even escharotic. It is also antiseptic. Is used to correct the foetor of gangrenous and offensive sores, and to remove putrid odours. It is also useful in caries and necrosis; and may be applied to carbuncles, lupus, etc., or for the destruction of haemorrhoids. Internally it may be given for the same objects as creosote. When inadvertently inhaled, or applied to a large extent of surface, poisonous symptoms may arise, such as nausea, vomiting, feeble pulse, and even coma and convulsions. The best antidote is olive-oil. As an external application to ulcers, etc., 1 part of the acid should be mixed with 7 or 8 of water.

ACIDUM ACETICUM. Acetic Acid. $\text{HC}_2\text{H}_3\text{O}_2$.

This acid is prepared from wood by destructive distillation. It is a colourless liquid, with a very pungent odour and strong acid taste. Specific gravity, 1.044. It is volatile, and leaves no residue when evaporated. It gives a cherry-red colour with a solution of perchloride of iron.

Officinal Preparation. — OXYMEL (clarified honey, acetic acid and distilled water). *Dose*, 1 to 2 drachms.

Acetic acid is also contained in LIQUOR EPISPASTICUS.

ACIDUM ACETICUM DILUTUM, diluted acetic acid (acetic acid, 1 pint; and distilled water, 7 pints). *Dose*, 1 to 2 drachms. Used in the preparation of ACETUM SCILLÆ and LIQUOR MORPHÆ ACETATIS.

Therapeutics.—Acts as a refrigerant when taken internally, but is seldom used for this purpose. Externally, in the strong form, it is used as a rubefacient, sometimes as a vesicant and escharotic ; but the glacial acid is more effectual for such purposes. Much diluted, it may be employed for sponging the surface in fevers, to check excessive sweating, and also as a soothing lotion. It is more frequently used on account of its solvent powers.

Adulterations.—Metallic impurities, as copper and foreign acids.

ACIDUM ACETICUM GLACIALE, glacial acetic acid (concentrated acetic acid, corresponding to at least 84 per cent. of the anhydrous acid, $C_4H_6O_3$).*

Officinal Preparations.—Used in the preparation of ACETUM CANTHARIDIS and MISTURA CREOSOTI.

Therapeutics.—A caustic, irritant, vesicant and escharotic. chiefly used for external application.

ACIDUM CITRICUM. Citric acid. $H_3C_6H_5O_7, H_2O$.

A crystalline acid, prepared from lemon-juice, or from the juice of the fruit of Citrus Limetta. Prepared chalk is added to the lemon-juice, forming citrate of lime ; to this sulphuric acid is added, to precipitate sulphate of lime and set free the citric acid. *Dose.* 10 to 30 grains.

Therapeutics.—Appears to act internally as a refrigerant. Merely allays thirst and irritation of the skin.

The free acid is contained in VINUM QUINAE, SUCCUS LIMONIS and SYRUPUS LIMONIS.

Adulterations.—Traces of sulphuric and tartaric acids.

ACIDUM OXALICUM. Oxalic acid. $H_2C_2O_4, 2H_2O$.

This acid is prepared by the action of caustic potash upon sawdust (by which means oxalate of potash is formed), and the subsequent addition of sulphuric acid with the production of sulphate of potash and oxalic acid. It is only used as a test reagent.

Tests.—(1) Nitrate of silver gives a white precipitate of oxalate of silver, soluble in cold nitric acid. Oxalate of silver, when heated upon platinum foil, is decomposed with detonation, leaving metallic silver behind.

* If we take $2HC_2H_3O_2$, we find this collectively equals $C_4H_6O_4$, and by abstracting a molecule of water (H_2O) from this we obtain $C_4H_6O_3$.

(2) Sulphate of lime gives a *white* precipitate of oxalate of lime.

ACIDUM TARTARICUM. Tartaric Acid. $\text{H}_2\text{C}_4\text{H}_4\text{O}_6$.

A crystalline acid, prepared from the acid tartrate of potash by the following processes :

(a) Carbonate of lime (CaCO_3) is added to the acid tartrate of potash ($\text{KHC}_4\text{H}_4\text{O}_6$). Thus—



Water, carbonic anhydride, neutral tartrate of potash, and tartrate of lime are formed.

(b) Chloride of calcium (CaCl_2) is added to the neutral tartrate of potash ($\text{K}_2\text{C}_4\text{H}_4\text{O}_6$). Thus—



Chloride of potassium and a second portion of tartrate of lime resulting.

(c) Sulphuric acid (H_2SO_4) is added to the tartrate of lime ($\text{CaC}_4\text{H}_4\text{O}_6$). Thus—



Sulphate of lime and tartaric acid are produced.

Dose., 10 to 30 grains or more in water.

Test.—Gives a *white* crystalline precipitate with acetate of potash, tartrate of potash being formed slowly.

Therapeutics.—Acts in a similar manner to citric acid, allaying the thirst of fevers. It is generally administered in the form of cream of tartar (acid tartrate of potash), combined with bicarbonate of soda, in a state of effervescence.

Adulterations.—Acid tartrate of potash and alum have been sometimes added ; and sulphuric acid may be present from imperfect preparation.

ACIDUM BENZOICUM. Benzoic Acid. $\text{HC}_7\text{H}_5\text{O}_2$.

A crystalline acid obtained from benzoin, and prepared by sublimation. *Dose*, 10 to 15 grains. It is contained in AMMONIÆ BENZOAS, TINCTURA CAMPHORÆ COMPOSITA, and TINCTURA OPII AMMONIATA.

Therapeutics.—A stimulant to the mucous membrane of the bladder, acting as an alterative in chronic inflammation of this viscus, especially in those cases which are associated with alkalinity of the urine.

ACIDUM TANNICUM. Tannic Acid. $C_{27}H_{22}O_{17}$.

An acid extracted from galls, occurring in dull yellow vesicular masses, or thin glistening scales. It is prepared as follows:

The powdered galls are exposed to a damp atmosphere for two or three days, sufficient ether being then added to form a paste. After standing for twenty-four hours, the paste is compressed in a linen bag, and the liquid part preserved. The pressed cake is reduced to powder and mixed with ether, one-sixteenth of its bulk of water being added to form again a soft paste. This is then pressed as before. The expressed liquids are mixed, and exposed to spontaneous evaporation until they have acquired the consistence of a soft extract, which is dried in a hot-air chamber at a temperature not exceeding 212°F. *Dose*, 2 to 10 grains.

Officinal Preparations.—**GLYCERINUM ACIDI TANNICI** (tannic acid, 1 ounce, and glycerine, 4 fluid ounces).

SUPPOSITORIA ACIDI TANNICI (tannic acid, benzoated lard, white wax, oil of theobroma); 2 grains in each suppository.

TROCHISCI ACIDI TANNICI (tannic acid, tincture of tolu, sugar, gum arabic, mucilage of gum arabic and water); $\frac{1}{2}$ grain in each lozenge.

Tests.—The aqueous solution of tannic acid gives—

- (1) A blueish-black precipitate with persalts of iron; and
- (2) A yellowish-white precipitate with a solution of gelatine.

ACIDUM GALLICUM. Gallic Acid. $H_3C_7H_3O_5.H_2O$.

A crystalline acid, occurring in white, or pale fawn-coloured silky needles; prepared from galls. The galls are powdered and made into a paste with water, being kept in this condition for six weeks, at a temperature of between 60°F. and 70°F. The paste is then boiled with distilled water and strained; when the solution cools, crystals are deposited, which are redissolved in boiling water; the liquid is then allowed to cool to 80°F. The crystals that are formed are washed with ice-cold water, and finally dried at a temperature not exceeding 100°F. The gallic acid is apparently formed during this process by a nitrogenous ferment (contained in the gall nuts) acting upon the tannic acid.

Dose, 2 to 10 grains.

Officinal Preparation.—**GLYCERINUM ACIDI GALLICI** (gallic acid, 1 ounce; glycerine, 4 fluid ounces).

Tests.—The aqueous solution of gallic acid gives—

(1) A *blueish-black* precipitate with the persalts of iron; but

(2) No precipitate with a solution of gelatine.

Therapeutics of Gallic and Tannic Acids.—Tannic acid is a powerful astringent when applied to a living part. Internally administered, dryness of the mouth and fauces, with thirst, and sometimes constipation, are occasioned after absorption by the blood ; it is partly thrown out by the kidneys as gallic and pyrogallic acids. Gallic acid is less astringent than tannic acid, perhaps on account of its being comparatively less soluble. After absorption, its remote effects are the same as those of tannic acid. Both the above acids may be employed in hæmaturia, hæmoptysis and menorrhagia ; in diarrhoea and dysentery, or wherever there is increased discharge of mucus, and to check excessive sweating. The compounds of gallic or tannic acids may be given to stay hæmorrhage from the nose, gums, etc. ; or to diminish such discharges as gleet, hæmorrhoids and leucorrhœa.

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Physician to the Royal Eastern Hospital for Children,
Late Medical Officer to Assistant and Hospital Physician at the
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P R E F A C E.

IN the present work I have endeavoured, as much as possible, to arrange the contained substances in alphabetical order, thus departing from the plan usually adopted by writers on the subject, who have attempted some sort of botanical classification.

The officinal substances only have been retained, to the entire exclusion of those which are non-officinal.

The descriptions and doses of the "British Pharmacopeia" have been closely followed, and in many instances the text of that volume has been copied literally.

Although the various ingredients employed in each preparation have been specified throughout, the exact pharmaceutical operations have in most cases been omitted, a Third Part of these "Aids" being in contemplation in which it is proposed that these details shall be more fully discussed.

That the following pages may prove serviceable to the student in acquiring some preliminary knowledge of Materia Medica and Therapeutics is the sole object and sincere desire of

THE AUTHOR.

8, TORRINGTON SQUARE, W.C.

December, 1879.

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Cruciferæ	Ranunculacæ
Guttiferæ	Rutacæ
Linacæ	Simarubacæ
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Cannabinaceæ	Moraceæ
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----------	---------

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CLASS. PISCES.

Teleostei (Anacanthini).

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Hirudinea.

EXPLANATORY TABLE OF ABBREVIATIONS.

		IN PRESCRIPTIONS.		
ABBREVIATION.	LATIN. (singular.)	(Plural.)	ENGLISH.	gr.
gr.	— granum	... ... grana	— a grain or grains	— m.
min.	— minimum	... ... minima	— a minim or minims	— 3
dr.	— drachma	... ... drachmæ	— a drachm or drachms	fl. 3
fl. dr.	— fluid drachma	... ... fluid drachmæ	— a fluid drachm or fluid drachms	— 3
oz.	— uncia	... ... uncias	— an ounce or ounces	fl. 3
fl. oz.	— fluid uncia	... ... fluid uncias	— a fluid ounce or fluid ounces	= O.
oct.	— octarius	... ... octarii	— a pint or pints	— C.
cong.	— congius	... ... congii	— a gallon or gallons	— lb.
lb.	— libra	... ... ...	— a pound or pounds	



TABLE OF OFFICINAL SUBSTANCES WITH THEIR PREPARATIONS.

VEGETABLE KINGDOM.

CLASS I. EXOGENÆ.

SUB-CLASS I. THALAMIFLORÆ.

Natural Order. AURANTIACEÆ.

AURANTII CORTEX.

Infusum Aurantii.

„ *Aurantii Compositum.*

„ *Gentianæ Compositum.*

Mistura Gentianæ.

Spiritus Armoraciae Compositus.

Tinctura Aurantii. *Syrupus Aurantii.*

„ *Cinchonæ Composita.*

„ *Gentianæ Composita*

Vinum Aurantii.

AURANTII FLORIS AQUA.

Syrupus Aurantii Floris.

AURANTII FRUCTUS.

Tinctura Aurantii Recensis.

BELE FRUCTUS.

Extractum Belæ Liquidum.

LIMONIS CORTEX.

Infusum Aurantii Compositum.

„ *Gentianæ Compositum.*

Syrupus Limonis.

Tinctura Limonis.

LIMONIS OLEUM.

LIMONIS SUCCUS.

Syrupus Limonis.

Nat. Ord. BYTTNERIACEÆ.

THEOBROMÆ OLEUM.

Nat. Ord. CANELLACEÆ.

CANELLAE ALBÆ CORTEX.

Vinum Rhei.

Nat. Ord. CRUCIFERÆ.

ARMORACÆ RADIX.*Spiritus Armoraciae Compositus.***SINAPIS SEMINA.***Cataplasma Sinapis.**Charta Sinapis.***SINAPIS OLEUM.***Linimentum Sinapis Compositum.*

Nat. Ord. GUTTIFERÆ.

CAMBOGIA.*Pilula Cambogiae Composita.*

Nat. Ord. LINACEÆ.

LINI FARINA.*Cataplasma Lini.***LINI OLEUM.****LINI SEMINA.***Infusum Lini.*

Nat. Ord. MAGNOLIACEÆ.

ILLICIUM ANISATUM.

Nat. Ord. MALVACEÆ.

GOSSYPIUM.*Pyroxylin.**Collodium.**,, Flexible.*

Nat. Ord. MENISPERMACEÆ.

CALUMBÆ RADIX.*Extractum Calumbæ.**Infusum Calumbæ.**Mistura Ferri Aromatica.**Tinctura Calumbæ.***PEREIRÆ RADIX.***Decoctum Pereiræ.**Extractum Pereiræ.**,, Pereiræ Liquidum.*

Nat. Ord. PAPAVERACEÆ.

OPIUM.*Confectio Opii.**Emplastrum Opii.**Enema Opii.**Extractum Opii.**,, Opii Liquidum.**Linimentum Opii.*

Pilula Ipecacuanhæ cum Scilla.
 „ *Plumbi cum Opio.*
 „ *Saponis Composita.*
Pulvis Cretæ Aromaticus cum Opio.
 „ *Ipecacuanhæ Compositus.*
 „ *Kino Compositus.*
 „ *Opii Compositus.*
Suppositoria Plumbi Composita.
Tinctura Camphoræ Composita.
 „ *Opii.*
 „ *Opii Ammoniata.*
Trochisci Opii.
Unguentum Gallæ cum Opio.
Vinum Opii.

MORPHIÆ ACETAS.

Liquor Morphiaæ Acetatis.

MORPHIÆ HYDROCHLORAS.

Injectio Morphia Hypodermicæ.
Liquor Morphia Hydrochloratis.
Suppositoria Morphia.

Morphia cum Sapone.
Trochisci Morphia.

„ *Morphia et Ipecacuanhæ.*

PAPAVERIS CAPSULÆ.

Decoctum Papaveris.
Extractum Papaveris.
Syrupus Papaveris.

RHÆADOS PETALA.

Syrupus Rhæados.

Nat. Ord. **POLYGALACEÆ.**

KRAMERIÆ RADIX.

Extractum Kramerie.
Infusum Krameriae.
Pulvis Catechu Compositus.
Tinctura Krameriae.

SENEGÆ RADIX.

Infusum Senegæ.
Tinctura Senegæ.

Nat. Ord. **RANUNCULACEÆ.**

ACONITI FOLIA.

Extractum Aconiti.

ACONITI RADIX.

Linimentum Aconiti.
Tinctura Aconiti.

ACONITIA.

Unguentum Aconitiae.
PODOPHYLLI RADIX.
PODOPHYLLI RESINA.

Nat. Ord. **RUTACEÆ.**

BUCHU FOLIA.

Infusum Buchu.

CUSPARIA CORTEX.

Infusum Cuspariae.

RUTÆ OLEUM.

Nat. Ord. **SIMARUBACEÆ.**

QUASSIA LIGNUM.

Extractum Quassiae.
Infusum Quassiae.
Tinctura Quassiae.

Nat. Ord. **VITACEÆ.**

UVÆ.

Tinctura Cardamomi Composita.
 „ *Sennæ.*

Nat. Ord. **ZYGOPHYLLACEÆ.**

GUAIACI LIGNUM.

Decoctum Sarsæ Compositum.

GUAIACI RESINA.

Mistura Guaiaci.
Pilula Hydrargyri Subchloridi Composita.
Tinctura Guaiaci Ammoniata.

SUB-CLASS II.—CALYCIFLORÆ.

Nat. Ord. **AMYRIDACEÆ.**

ELEMI.

Unguentum Elemi.

MYRRHA.

Decoctum Aloes Compositum.
Mistura Ferri Composita.
Pilula Aloes et Myrrhae.
 „ *Asafætidæ Composita.*
 „ *Rhei Composita.*
Tinctura Myrræ.

Nat. Ord. **ANACARDIACEÆ.**

MASTICHE.

Nat. Ord. CUCURBITACEÆ.

COLOCYNTHIDIS PULPA.

*Extractum Colocynthidis Compositum.**Pilula Colocynthidis Composita.**„ Colocynthidis et Hyoscyami*

ECBALII FRUCTUS.

ELATERIUM.

Pulvis Elaterii Compositus.

Nat. Ord. LEGUMINOSÆ.

Sub. Ord. PAPILIONACEÆ.

BALSAMUM PERUVIANUM.

BALSAMUM TOLUTANUM.

*Syrupus Tolutanus.**Tinctura Benzoini Composita.**Tolutana.*

GLYCYRRHIZÆ RADIX.

*Confectio Terebinthinae.**Decoctum Sarsæ Compositum.**Extractum Glycyrrhizæ.**Glycyrrhizæ Liquidum.**Infusum Lini.**Pilula Hydrargyri.**„ Ferri Iodidi.**Pulvis Glycyrrhizæ Compositus.*

KINO.

*Pulvis Catechu Compositus.**„ Kino Compositus.**Tinctura Kino.*

PHYSOSTIGMatis FABA.

Extractum Physostigmatis.

PTEROCARPI LIGNUM.

Tinctura Lavandulae Composita.

SCOPARIÆ CACUMINA.

*Decoctum Scoparii (dried).**Succus Scoparii (fresh).*

TRAGACANTHA.

*Confectio Opii.**Mucilago Tragacanthæ.**Pulvis Opii Compositus.**„ Tragacanthæ Compositus.*

Sub. Ord. CASALPINEÆ.

CASSIA PULPA.

Confectio Sennæ.

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Nat. Ord. ROSACEÆ.

AMYGDALA AMARA.**AMYGDALA DULCIS.***Mistura Amygdalæ.**Pulvis Amygdalæ Compositus.***AMYGDALE OLEUM.****CUSSO.***Infusum Cusso.***LAUROCERASI FOLIA.***Aqua Laurocerasi.***PRUNUM.***Confectio Sennæ.***Rosæ CANINÆ FRUCTUS.***Confectio Rosæ Caninæ.***Rosæ CENTIFOLLÆ PETALA.***Aqua Rosæ.***Rosæ GALLICÆ PETALA.***Confectio Rosæ Gallicæ.**Infusum Rosæ Acidum.**Syrupus Rosæ Gallicæ.*

Nat. Ord. UMBELLIFERÆ.

AMMONIACUM.*Emplastrum Ammoniaci cum Hydrargyro.**Galbani.**" Mistura Ammoniaci.**Pilula Scillæ Composita.**" Ipecacuanhæ cum Scilla.***ANETHI FRUCTUS.***Aqua Anethi.***ANETHI OLEUM.****ANISI OLEUM.***Essentia Anisi.**Tinctura Camphoræ Composita.**" Opii Ammoniata.***ASSAFETIDA.***Enema Assafetidæ.**Pilula Aloë et Assafetidæ.**" Assafetidæ Composita.**Spiritus Ammoniae Fætidus.**Tinctura Assafetidæ.***CARUI FRUCTUS.***Aqua Carui.**Confectio Opii.**" Piperis.*

Pulvis Opii Compositus.
Tinctura Cardamomi Composita.
Sennæ.
CARUI OLEUM.
CONII FOLIA.
Cataplasma Conii.
Extractum Conii. *Pilula Conii Composita.*
Vapor Conicæ.
Succus Conii.
CONII FRUCTUS.
Tinctura Conii.
CORIANDRI FRUCTUS.
Confectio Sennæ.
Mistura Gentiar.æ.
Syrupus Rhei.
Tinctura Rhei.
Sennæ.
CORIANDRI OLEUM.
FENICULI FRUCTUS.
Aqua Feniculi.
GALBANUM.
Emplastrum Galbani.
Pilula Assafætidæ Composita.
SUMBUL RADIX.
Tinctura Sumbul.

SUB-CLASS III. COROLLIFLORÆ.

Nat. Ord. ASCLEPIADACEÆ.

HEMIDESMI RADIX.
Syrupus Hemidesmi.

Nat. Ord. ATROPACEÆ.

BELLADONNÆ FOLIA.
Extractum Belladonnæ.
Emplastrum Belladonnæ.
Unguentum Belladonnæ.
Succus Belladonnæ.
Tinctura Belladonnæ.
BELLADONNÆ RADIX.
Linimentum Belladonnæ.
ATROPIA.
Liquor Atropiæ.
Unguentum Atropiæ.

ATROPIÆ SULPHAS.*Liquor Atropiae Sulphatis.***HYOSCYAMI FOLIA.***Extractum Hyoscyami.**Succus Hyoscyami.**Tinctura Hyoscyami.***STRAMONII FOLIA.****STRAMONII SEMINA.***Extractum Stramonii.**Tinctura Stramonii.***TABACI FOLIA.***Enema Tabaci.***Nat. Ord. CAPRIFOLIACEÆ.****SAMBUCI FLORES.***Aqua Sambuci.***Nat. Ord. CINCHONACEÆ.****CATECHU PALLIDUM.***Infusum Catechu.**Pulvis Catechu Compositus.**Tinctura Catechu.**Trochisci Catechu.***CINCHONÆ FLAVÆ CORTEX.***Decoctum Cinchonæ Flavæ.**Extractum Cinchonæ Flavæ Liquidum.**Infusum Cinchonæ Flavæ.**Tinctura Cinchonæ Flavæ.***QUINIAE SULPHAS.***Ferri et Quiniae Citras.**Pilula Quiniae.**Tinctura Quiniae.**Quiniae Ammoniata.**Vinum Quiniae.***CINCHONÆ PALLIDÆ CORTEX.***Mistura Ferri Aromatica.**Tinctura Cinchonæ Composita.***CINCHONÆ RUBRAE CORTEX.****IPECACUANHA.***Pilula Conii Composita.**” Ipecacuanhae cum Scilla.**Pulvis Ipecacuanhae Compositus.**Trochisci Ipecacuanhae.**” Morphiae et Ipecacuanhae.**Vinum Ipecacuanhae.*

Nat. Ord. COMPOSITÆ.

ANTHEMIDIS FLORES.*Extractum Anthemidis.**Infusum Anthemidia.***ANTHEMIDIS OLEUM.****ARNICÆ RADIX.***Tinctura Arnicae.***LACTUCA.***Extractum Lactuccæ.***PYRETHRI RADIX.***Tinctura Pyrethri.***SANTONICA.****SANTONINUM.****TARAXACI RADIX.***Decoctum Taraxaci.**Extractum Taraxaci.**Succus Taraxaci.*

Nat. Ord. CONVOLVULACEÆ.

JALAPA.*Extractum Jalapæ.**Pulvis Jalapæ Compositus.**,, Scammonii Compositus.**Tinctura Jalapæ.***JALAPÆ RESINA.****SCAMMONIÆ RADIX.****SCAMMONIÆ RESINA.***Extractum Colocynthidis Compositum,**Mistura Scammonii.**Pilula Scammonii Composita.***SCAMMONIUM.***Confectio Scammonii.**Pilula Colocynthidis Composita.**,, Colocynthidis et Hyoscyami.**Pulvis Scammonii Compositus.*

Nat. Ord. ERICACEÆ.

UVÆ URSI FOLIA.*Infusum Uvæ Ursi.*

Nat. Ord. GENTIANACEÆ.

CHIRATA.*Infusum Chiratae.**Tinctura Chiratae.*

GENTIANÆ RADIX.

Extractum Gentianæ.
Infusum Gentianæ Compositum.
Mistura Gentianæ.
Tinctura Gentianæ Composita.

Nat. Ord. **LABIATÆ.****LAVANDULÆ OLEUM.**

Linimentum Camphoræ Compositum.
Spiritus Lavandulae.
Tinctura Lavandulae Composita.

MENTHÆ PIPERITÆ OLEUM.

Aqua Menthae Piperitæ.
Essentia Menthae Piperitæ.
Pilula Rhei Composita.
Spiritus Menthae Piperitæ.

MENTHÆ VIRIDIS OLEUM.

Aqua Menthae Viridis.

ROSMARINI OLEUM.

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Spiritus Rosmarini.
Tinctura Lavandulae Composita.

Nat. Ord. **LOGANIACEÆ.****NUX VOMICA.**

Extractum Nucis Vomicæ.
Tinctura Nucis Vomicæ.

STRYCHNIA.

Liquor Strychniae.

Nat. Ord. **OLEACEÆ.****GLYCERINUM.**

Glycerinum Acidi Carbolicæ.
 " *Acidi Gallici.*
 " *Acidi Tannici.*
 " *Amyli.*
 " *Boracis.*
 " *Linimentum Potassii Iodidi cum Sapone.*

MANNA.**OLIVEÆ OLEUM.**

Cataplasma Lini.
Charta Epispastica.
Emplastrum Ammoniaci cum Hydrargyro.
 " *Cerati Saponis.*
 " *Hydrargyri.*

<i>Emplastrum Picis.</i>	
	<i>Plumbi.</i>
<i>"</i>	<i>Enema Magnesiae Sulphatis.</i>
<i>"</i>	<i>Linimentum Ammoniae.</i>
<i>"</i>	<i>Calcis.</i>
<i>"</i>	<i>Camphorae.</i>
<i>Unguentum</i>	<i>Cantharidis.</i>
<i>"</i>	<i>Hydrargyri Compositum.</i>
<i>"</i>	<i>Hydrargyri Nitratus.</i>
<i>"</i>	<i>Veratricæ.</i>

SAPO ANIMALIS.

<i>Pilula Scammonii Composita.</i>	
<i>Suppositoria Acidi Carbolici cum Sapone.</i>	
<i>"</i>	<i>Acidi Tannici cum Sapone.</i>
<i>"</i>	<i>Morphiae cum Sapone.</i>

SAPO DURUS.

<i>Emplastrum Resinæ.</i>	
	<i>Saponis.</i>
<i>"</i>	<i>Extractum Colocynthidis Compositum.</i>
<i>Linimentum Potassii Iodidi cum Sapone.</i>	
	<i>Saponis.</i>
<i>Pilula Aloes Barbadiana.</i>	
<i>"</i>	<i>Aloes et Assafætidæ.</i>
<i>"</i>	<i>Aloes Socotræ.</i>
<i>"</i>	<i>Cambogia Composita.</i>
<i>"</i>	<i>Saponis Composita.</i>
<i>"</i>	<i>Scillæ Composita.</i>

SAPO MOLLIS.

<i>Linimentum Terebinthinae.</i>	
	<i>Nat. Ord. SAPOTACEÆ.</i>

GUTTA PERCHA.

Liquor Gutta Percha.

Nat. Ord. SCROPHULARIACEÆ.

DIGITALIS FOLIA.

<i>Infusum Digitalis.</i>	
<i>Tinctura Digitalis.</i>	

DIGITALINUM.

Nat. Ord. SOLANACEÆ.

CAPSICI FRUCTUS.

Tinctura Capsici.

DULCAMARA.

Infusum Dulcamarae.

Nat. Ord. STYRACEÆ.

BENZOINUM.*Acidum Benzoicum.**Adeps Benzoatus.**Tinctura Benzoini Composita.*

Nat. Ord. VALERIANACEÆ.

VALERIANÆ RADIX.*Infusum Valerianæ.**Tinctura Valerianæ.**„ Valerianæ Ammoniata.***VALERIANAS SODÆ.****VALERIANAS ZINCI.**SUB-CLAS^S IV. APETAL.^E.

Nat. Ord. ARISTOLOCHIÆ.

SERPENTARIE RADIX.*Infusum Serpentariae.**Tinctura Cinchonæ Composita.**„ Serpentariae.*

Nat. Ord. CANNABINACEÆ.

CANNABIS INDICA.*Extractum Cannabis Indicae.**Tinctura Cannabis Indicae.*

Nat. Ord. CONIFERÆ OR PINACEÆ.

JUNIPERI OLEUM.*Spiritus Juniperi.***LARICIS CORTEX.***Tinctura Laricis.***PIX BURGUNDICA.***Emplastrum Ferri.**Picis.***PIX LIQUIDA.***Unguentum Picis Liquidæ.***RESINA.***Charta Epispistica.**Emplastrum Calefaciens.**Cantharidis.**„ Opii.**„ Picis.**„ Resinæ.**„ Saponis.*

- Unguentum Resinæ.
Terebinthinae.*
- SARINÆ CACUMINA.**
*Tinctura Sabinæ.
Unguentum Sabinæ.*
- SABINÆ OLEUM.**
- TEREBINTHINA CANADENSIS.**
*Charta Epispistica.
Collodium Flexile.*
- TEREBINTHINÆ OLEUM.**
*Confectio Terebinthinae.
Enema Terebinthinae.
Linimentum Terebinthinae
Terebinthinae Aceticum.
Unguentum Terebinthinae.*
- THUS AMERICANUM.**
Emplastrum Picis.
- Nat. Ord. **CUPULIFERÆ.**
- GALLA.**
*Acidum Gallicum.
Tannicum.
Tinctura Gallæ.
Unguentum Gallæ.
Gallæ cum Opio.*
- QUERCUS CORTEX.**
Decoctum Quercus.
- Nat. Ord. **EUPHORBIACEÆ.**
- CASCARILLÆ CORTEX.**
*Infusum Cascarillæ.
Tinctura Cascarillæ.*
- CROTONIS OLEUM.**
Linimentum Crotonis.
- KAMALA.**
- RICINI OLEUM.**
*Collodium Flexile.
Linimentum Sinapis Compositum.
Pilula Hydrargyri Subchloridi Composita.*
- Nat. Ord. **LAURACEÆ.**
- CAMPHORA.**
*Aqua Camphoræ.
Linimentum Aconiti.
,, Belladonnae.*

Linimentum Camphore.
 „ *Camphoræ Compositum.*
 „ *Chloroformi.*
 „ *Hydrargyri.*
 „ *Jodi.*
 „ *Opii.*
 „ *Saponis.*
 „ *Sinapis Compositum.*
 „ *Terebinthince.*
 „ *Terebinthinae Aceticum.*

Spiritus Camphoræ.
Tinctura Camphoræ Composita.
Unguentum Hydrargyri Compositum.
Unguentum Plumbi Subacetatis Compositum.

CINNAMOMI CORTEX.

Acidum Sulphuricum Aromaticum.
Aqua Cinnamomi.
Decoctum Hæmatoxylī.
Infusum Catechu.
Pulvis Catechu Compositus.
 „ *Cinnamomi Compositus.*
 „ *Cretæ Aromaticus.*
 „ *Kino Compositus.*
Tinctura Cardamomi Composita.
 „ *Catechu.*
 „ *Cinnamomi.*
 „ *Lavandulae Composita.*

Vinum Opii.

CINNAMOMI OLEUM.

NECTANDRÆ CORTEX.
Beberice Sulphas.

SASSAFRAS.

Decoctum Sarsæ Compositum.
 Nat. Ord. LIQUIDAMBARACEÆ.
 STYRAX PRÆPARATUS.
Tinctura Benzoini Composita.
 Nat. Ord. MORACEÆ.

FICUS.

Confectio Sennæ.

MORI SUCCUS.

Syrupus Mori.

Nat. Ord. MYRISTICACEÆ.

MYRISTICA.

Pulvis Catechu Compositus.

Pulvis Cretæ Aromaticus.

Spiritus Armoraciae Compositus.

Tinctura Lavandulae Composita.

MYRISTICÆ OLEUM.

Pilula Aloë Socotrinae.

Spiritus Anmoniae Aromaticus.

" *Myristicae.*

MYRISTICÆ OLEUM EXPRESSUM.

Emplastrum Calefaciens.

" *Picis.*

Nat. Ord. PIPERACEÆ.

CUBEBA.

Tinctura Cubebae.

CUBEBAE OLEUM.

MATICÆ FOLIA.

Infusum Maticæ.

PIPER NIGRUM.

Confectio Opii.

Piperis.

Pulvis Opii Compositus.

Nat. Ord. POLYGONACÆ.

RHEI RADIX.

Extractum Rhei.

Infusum Rhei.

Pilula Rhei Composita.

Pulvis Rhei Compositus.

Syrupus Rhei.

Tinctura Rhei.

Vinum Rhei.

Nat. Ord. THYMELACEÆ.

MEZEREI CORTEX.

Decoctum Sarsæ Compositum.

Extractum Mezerei Æthereum.

Nat. Ord. ULMACEÆ.

ULMI CORTEX.

Decoctum Ulmi.

CLASS II. ENDOGENÆ.

Nat. Ord. GRAMINACEÆ.

AMYLMUM.

Glycerinum Amyli.
Mucilago Amyli.
Pulvis Tragacanthæ Compositus.

ERGOTA.

Extractum Ergotæ Liquidum.
Infusum Ergotæ.
Tinctura Ergotæ.

FARINA TRITICI.

Cataplasma Fermenti.

HORDEUM DECORTICATUM.

Decoctum Hordei.

MICA PANIS.

Cataplasma Carbonis.

SACCHARUM PURIFICATUM.

Confectio Rosæ Caninæ.

 " " *Gallice.*
 " " *Sennæ.*

Ferri Carbonas Saccharata.

Liquor Calcis Saccharatus.

Mistura Ferri Composita.

Guaiaci.

Pilula Ferri Iodidi.

Pulvis Cretæ Aromaticus.

 " *Amygdalæ Compositus.*

 " *Tragacanthæ Compositus.*

All the Lorenzes and Syrups.

THERIACA.

Pilula Assafætidæ Compocita.

 " *Conii Composita.*

 " *Ipecacuanha cum Scilla.*

 " *Rhei Composita.*

 " *Scillæ Composita.*

Nat. Ord. IRIDACEÆ.

CROCUS.

Decoctum Aloes Compositum.

Pilula Aloes et Myrrha.

Pulvis Cretæ Aromaticus.

Tinctura Cinchonæ Composita.

 " *Croci.*

 " *Opii Ammoniata.*

 " *Rhei.*

Nat. Ord. LILIACEÆ.

ALOE BARBADENSIS.

- Enema Aloes.*
Extractum Aloes Barbadensis.
Pilula Aloes Barbadensis.
 " " et Ferri.
 " Cambogiae Composita.
 " Cologynthidis Composita.
 " " et Hyoscyami.

ALOE SOCOTRINA.

- Decocatum Aloes Compositum (extract).*
Enema Aloes.
Extractum Aloes Socotrinæ.
 " " Cologynthidis Compositum (extract).
Pilula Aloes et Assafætidæ.
 " " et Myrræ.
 " " Socotrinæ.
 " Rhei Composita.
Tinctura Aloes.
 " Benzoini Composita.
Vinum Aloes.

SCILLA.

- Acetum Scillæ.*
Oxymel Scillæ.
Pilula Ipecacuanhæ cum Scilla.
 " Scillæ Composita.
Syrupus Scilla.
Tinctura Scillæ.

Nat. Ord. MELANTHACRÆ.

COLCHICI CORMUS.

- Extractum Colchici.*
 " " Aceticum.
Vinum Colchici.

COLCHICI SEMINA.

- Tinctura Colchici Seminum.*

SABADILLA.

- VERATRIA.**
Unguentum Veratris.
VERATRI VIRIDIS RADIX.
Tinctura Veratri Viridis.

Nat. Ord. PALMACEÆ.

ARECA.

Nat. Ord. SMILACÆ.

SARSÆ RADIX.

*Decoctum Sarsæ.**" Compositum.**Extractum Sarsæ Liquidum.*

Nat. Ord. ZINGIBERACEÆ.

CARDAMOMUM.

*Extractum Colocynthidis Compositum.**Pulvis Cinnamomi Compositus.**" Crete Aromaticus.**Tinctura Cardamomi Composita.**" Gentianæ Composita.**" Rhei.**Vinum Aloes.*

CURCUMA.

*Turmeric Paper.**Turmeric Tincture.*

ZINGIBER.

*Confectio Opii.**Scammonii.**" Infusum Sennæ.**Pilula Scillæ Composita.**Pulvis Cinnamomi Compositus.**" Jalapa Compositus.**" Opii Compositus.**" Rhei Compositus.**" Scammonii Compositus.**Syrupus Rhamni.**" Zingiberis.**Tinctura Zingiberis.**" Fortior.**Vinum Aloes."*

CLASS III. ACOTYLEDONES.

Nat. Ord. LICHENES.

CETRARIA.

Decoctum Cetrariæ.

LACMUS. LITMUS.

*Tincture of Litmus.**Blue Litmus Paper.**Red Litmus Paper.*

Nat. Ord. FILICES.

FILIX MAS.

Extractum Filicis Liquidum.

ANIMAL KINGDOM.

CLASS. MAMMALIA.

Order. CETACEA.

CETACEUM.

Charta Epispastica.
Unguentum Cetacei.

Order. PACHYDERMATA.

ADEPS PRÆPARATUS.

Emplastrum Cantharidis.
Unguentum Aconitie.

„	<i>Atropiz.</i>
„	<i>Belladonnae.</i>
„	<i>Hydrargyri.</i>
„	“ <i>Nitratis.</i>
„	“ <i>Subchloridi.</i>
„	<i>Iodi.</i>
„	<i>Potassæ Sulphurata.</i>
„	<i>Potassii Iodidi.</i>
„	<i>Sabinae.</i>
„	<i>Simplex.</i>
„	<i>Sulphuris Iodidi.</i>
„	<i>Terebinthine.</i>
„	<i>Veratriæ.</i>

ADEPS BENZOATUS.

Suppositoria Acidi Tannici.
„ *Hydrargyri.*
„ *Morphiae.*
„ *Plumbi Composita*
Unguentum Gallæ.
„ *Plumbi Acetatis.*
„ *Sulphuris.*
„ *Zinci.*

Order. RODENTIA.

CASTOREUM.

Tinctura Castorei.

Order. RUMINANTIA.

FEL BOVINUM PURIFICATUM.

LAC.

Mistura Scammonii.
LACTIS SACCHARUM.

MOSCHUS.

PEPSINA.

SEVUM PRÆPARATUM.

Emplastrum Cantharidis.

Unguentum Hydrargyri.

CLASS. AVES.

OVI ALBUMEN.

OVI VITELLUS.

Mistura Spiritus Vini Gallici.

CLASS. PISCES.

ISINGLASS.

OLEUM MORRHUÆ.

CLASS. INSECTA.

Order. COLEOPTERA.

CANTHARIS.

Acetum Cantharidis.

Charta Epispastica.

Emplastrum Calefaciens.

Cantharidis.

" Epispasticus.

Tinctura Cantharidis.

Unguentum Cantharidis.

Order. HEMIPTERA.

COCCUS.

Tinctura Cardamomi Composita.

" Cinchonæ Composita.

" Coccii.

Order. HYMENOPTERA.

CERA ALBA.

Charta Epispastica.

Suppositoria Acidi Tannici.

" Hydrargyri.

" Morphicæ.

" Plumbi Composita.

Unguentum Cetacei.

" Plumbi Subacetatis Compositum.

" Simplex.

CERA FLAVA.

Emplastrum Calefaciens.

" Cantharidis.

<i>Emplastrum Cerati Saponis.</i>	
"	<i>Galbani.</i>
"	<i>Picis.</i>
<i>Unguentum Cantharidis.</i>	
"	<i>Hydrargyri Compositum.</i>
"	<i>Hydrargyri Oxidi Rubri.</i>
"	<i>Picis Liquidæ.</i>
"	<i>Resinæ.</i>
"	<i>Sabinae.</i>
"	<i>Terebinthinae.</i>

MEL.**MEL DEPURATUM.**

<i>Confectio Piperis.</i>	
"	<i>Scammonii.</i>
"	<i>Terebinthinae.</i>
<i>Mel Boracie.</i>	
<i>Oxymel.</i>	
"	<i>Scillaæ.</i>

CLASS. ANNELIDA.**HIRUDO.**

AIDS TO MATERIA MEDICA AND THERAPEUTICS.

THE VEGETABLE KINGDOM.

CLASS I.—EXOGENÆ.

SUB-CLASS I.—THALAMIFLORE.

Aurantiaceæ.

1. CITRUS BIGARADIA : THE SEVILLE OR BITTER ORANGE TREE.

Aurantii Cortex.—BITTER ORANGE PEEL.—The dried outer part of the RIND of Citrus Bigaradia. From the ripe fruit imported from the south of Europe.

Characters.—Thin, of a dark orange colour, nearly free from the inner white part of the rind, and possessing a fragrant odour and a bitter aromatic taste. Studded with oil-vesicles, which are convex in the sweet orange and concave in the bitter. Contains a volatile oil, a bitter extractive, *Hesperidin*, and a little gallic acid.

Officinal Preparations.—**INFUSUM AURANTII**.—Infusion of Orange Peel (bitter orange peel, cut small, $\frac{1}{2}$ oz. ; boiling distilled water, 10 fl. oz.). *Dose*.—1 to 2 fluid ounces.

INFUSUM AURANTII COMPOSITUM.—Compound Infusion of Orange Peel (bitter orange peel, cut small, $\frac{1}{2}$ oz. ; fresh lemon peel, cut small, 60 gr. ; cloves, bruised, 30 gr. ; boiling distilled water, 10 fl. oz.). *Dose*, 1 to 2 fluid ounces.

TINCTURA AURANTII.—Tincture of Orange Peel (bitter

orange peel, cut small and bruised, 2 oz.; proof spirit, 1 oct.). *Dose*, 1 to 2 fluid drachms.

SYRUPUS AURANTII.—Syrup of Orange Peel (tincture of orange peel, 1 fl. oz.; syrup, 7 fl. oz.). Contained in Confecio Sulphuris. *Dose*, 1 fluid drachm.

VINUM AURANTII.—Orange Wine (a wine produced by the addition of the fresh peel of the bitter orange to a fermented saccharine solution). Contains about 12 per cent. of alcohol. Used in the preparation of Vinum Ferri Citratis and Vinum Quiniae.

Bitter Orange Peel also forms an ingredient of the Infusum Gentianæ Compositum, the Tinctura Cinchonæ Composita, and the Tinctura Gentianæ Composita.

Aurantii Floris Aqua.—**ORANGE-FLOWER WATER.**—The distilled water of the flowers of the bitter orange, Citrus Bigaradia, and also of the sweet orange, Citrus Aurantium. Possesses the odour of orange-blossoms, and contains a volatile oil (*Oil of Neroli*), but not similar to that contained in the cortex.

Officinal Preparation.—**SYRUPUS AURANTII FLORIS.**—Syrup of Orange-Flower (orange-flower water, 8 fl. oz.; refined sugar, 3 lb.; distilled water, 16 fl. oz., or a sufficiency). *Dose*, 1 fluid drachm.

Aurantii Fructus.—**THE ORANGE FRUIT.**—The ripe fruit of the bitter orange. Imported from the South of Europe.

Officinal Preparation.—**TINCTURA AURANTII RECENTIS.**—Tincture of Fresh Orange-Peel (the coloured part of the rind of the bitter orange in thin slices, 6 oz.; rectified spirit, 1 oct.). *Dose*, 1 to 2 fluid drachms.

Therapeutics.—The rind acts as a bitter stomachic tonic, and is useful as an adjunct in the treatment of dyspepsia; by it the taste of quinine is somewhat masked. The syrup of orange and orange-flower water are employed only as flavouring agents.

Adulterations.—The orange-flower water may be impregnated with lead, which is acquired in the vessels in which it is imported; in this case sulphuretted hydrogen will give a dark stain.

2.—ÆGLE MARMELOS. THE BAEL TREE.

Ægle Fructus.—**BAEL FRUIT.** The dried half-ripe fruit of Ægle Marmelos. From Malabar and Coromandel.

Characters.—The fruit is somewhat round, and about the size of a large orange, with a woody rind. It is usually im-

ported in dried slices, or in fragments which consist of portions of rind with adherent dried pulp and seeds. Bael contains an astringent principle which may be somewhat allied to tannic acid.

Officinal Preparation.—EXTRACTUM BELÆ LIQUIDUM.—Liquid Extract of Bael (bael fruit, 1 lb. ; distilled water, 12 oct. ; rectified spirit, 2 fl. oz.).

Dose, 1 to 2 fluid drachms.

Therapeutics.—This drug enjoys considerable reputation in India for the treatment of dysentery and diarrhoea. From the ripe fruit a pulp may be obtained which, when made into a jelly, acts as a mild purgative.

3.—CITRUS LIMONUM. THE LEMON TREE.

Limonis Cortex.—LEMON PEEL.—The outer part of the RIND of the fresh fruit of Citrus Limonum. Lemons are imported from Southern Europe. The rind contains a pale-yellow volatile oil, tasting and smelling of the peel, a bitter extractive, and a little gallic acid; also a principle crystallising in fine white needles (*Heesperidin*).

Officinal Preparations.—SYRUPUS LIMONIS.—Syrup of Lemons (fresh lemon peel, 2 oz. ; lemon juice, strained, 1 oct. ; refined sugar, 2½ lb.). *Dose,* 1 fluid drachm.

TINCTURA LIMONIS.—Tincture of Lemon Peel (fresh lemon peel, sliced thin, 2½ oz. ; proof spirit, 1 oct.).

Dose, ½ to 2 fluid drachms.

Lemon peel is also contained in the Infusum Aurantii Compositum and Infusum Gentianæ Compositum.

Limonis Oleum.—OIL OF LEMON.—The oil expressed or distilled from fresh lemon peel. It consists of two isomeric oils composed of $C_{10}H_{16}$. Imported chiefly from Sicily.

Limonis Succus.—LEMON JUICE.—The freshly-expressed JUICE of the ripe fruit of Citrus Limonum.

Characters.—A yellowish, slightly-turbid liquor, having a grateful odour, and a sharp, acid taste. Contains citric acid and mucilage, together with small quantities of acid salts, especially those of potash; also malic acid and sugar. About 32 grains of citric acid are contained in each ounce of lemon juice.

Therapeutics.—Lemon peel is an aromatic stomachic. The volatile oil, when given internally, is carminative and stimulant: when applied externally, it is rubefacient.

Lemon juice is refrigerant, and may be employed instead of, and in preference to, citric acid in the preparation of effer-

vescing draughts ; it is also eminently anti-scorbutic. Lemon juice is held in much favour and successfully employed by some physicians in the treatment of acute rheumatism.

Adulterations.—Oil of turpentine ; this is difficult of detection, unless in large quantities. Lime juice is often mixed with lemon juice. A combination of sugar and water with diluted sulphuric acid has been substituted for lemon juice.

Byttneriaceæ.

THEOBROMA CACAO. CACAO BUTTER.

Theobromæ Oleum.—**OIL OF THEOBROMA.**—A concrete oil, obtained by expression and heat from the ground seeds of *Theobroma Cacao* ; it is used only in the formation of suppositories. The tree grows in South America and the West Indies.

Characters.—Of a yellowish colour, and the consistency of tallow, with an odour like chocolate. Does not turn rancid upon exposure to air, and breaks with a clean fracture. Contains mostly *Stearin* with a little *Olein*.

Canellaceæ.

CANELLA ALBA. THE LAUREL-LEAVED CANELLA.

Canellæ Albæ Cortex.—**CANELLA ALBA BARK.**—The BARK of *Canella Alba*. From the West Indies.

Characters.—In quills or broken pieces, hard, of a pale-orange or yellowish-white colour, somewhat lighter on the inner surface. Has a peppery acrid taste, and an aromatic clove-like odour. Contains a resin, some volatile oil, bitter extractive, mannae sugar and starch ; no gallic or tannic acids. *Dose, of the powdered bark, 15 to 30 grains.*

Therapeutics.—An aromatic tonic and stomachic. It has been employed in dyspepsia, but is seldom used except in combination, as in *Vinum Rhei*.

Cruciferæ.

1.—COCHLEARIA ARMORACIA. HORSERADISH.

Armoracis Radix.—**HORSERADISH Root.**—The fresh root of *Cochlearia Armoracia*. Cultivated in Britain.

Characters.—A long, cylindrical, fleshy root, about half an inch to an inch in diameter, expanding into several very short stems at the crown. Internally white. It emits a pungent

odour when scraped, and has an acrid taste, due to the presence of a volatile oil, which is identical with the oil of mustard.

Officinal Preparation.—**SPIRITUS ARMORACIAE COMPOSITUS.**—Compound Spirit of Horseradish (horseradish root, scraped, 20 oz. ; bitter orange peel, cut small and bruised, 20 oz. ; nutmeg, bruised, $\frac{1}{4}$ oz. ; proof spirit, 1 cong. ; water, 2 oct.). *Dose*, 1 to 2 fluid drachms.

Therapeutics.—As a rule horseradish is only used as a condiment ; the compound spirit may be given in dyspepsia, or as a sudorific in acute rheumatism, and as a diuretic in dropsies.

2.—SINAPIS NIGRA ET ALBA. BLACK AND WHITE MUSTARD.

Sinapis Semina.—The SEEDS of Sinapis Nigra and Sinapis Alba. Also the seeds reduced to powder, mixed.

Both the seeds contain a fixed oil ; the black variety contains *Myronic Acid* united with potash, as myronate of potash, which, by the action of *Myrosine* (an albuminous substance also residing in the seeds) breaks up, in the presence of water, into glucose, sulphuric acid, volatile oil of mustard, some free sulphur, etc.

The volatile oil of mustard has the composition and properties of allyl sulphocyanate (C_3H_4CNS). It produces immediate vesication when applied to the skin. This oil is not yielded by the white mustard, in which variety a crystallisable compound (*Sulpho-sinapisin*) is contained, and which gives rise to a non-volatile acrid principle containing sulphur.

The fixed oil of mustard contains *Erucic Acid*.

Characters and Test of the Powder.—Greenish-yellow, with a bitterish, oily, pungent, acrid taste, without scent when dry, and when moistened exhaling a peculiar pungent odour, highly irritating to the eyes and nostrils.

Officinal Preparations.—**CATAPLASMA SINAPIS.**—Mustard Poultice (mustard, in powder, $2\frac{1}{2}$ oz. ; linseed meal, $2\frac{1}{2}$ oz. ; boiling water, 10 fl. oz.).

CHARTA SINAPIS.—Mustard Paper (black mustard seeds, in powder, 1 oz. ; solution of gutta-percha, 2 fl. oz., or a sufficiency).

Sinapis Oleum.—**OIL OF MUSTARD.**—The oil distilled with water from the seeds of Black Mustard after the expression of the fixed oil.

Officinal Preparation.—**LINIMENTUM SINAPIS COMPOSITUM.**—Compound Liniment of Mustard (etherial extract of mezeleon, 40 gr., and camphor, 120 gr., dissolved in rectified

spirit, 4 fl. oz.; oil of mustard, 1 fl. dr., and castor oil fl. dr., being subsequently added.

Therapeutics.—Powerfully stimulant. Internally, in large doses, mustard induces speedy vomiting. In smaller doses assists digestion. Externally applied in the form of a poultice, it is a powerful counter-irritant and rubefacient, and may be thus usefully employed for the relief of many inflammations of the serous and mucous membranes, as in pleurisy and bronchitis, or to alleviate neuralgia and other pains.

Adulterations.—Common flour, chilies, turmeric and pepper.

Guttiferae.

GARCINIA MORELLA.

Cambogia.—**GAMBOGE.**—A gum-resin obtained from *Garcinia Morella*. Imported from Siam. *Dose*, 1 to 4 grains.

Characters.—In cylindrical pieces, which break easily, with a glistening conchoidal smooth fracture; colour, tawny, turning yellow when it is rubbed with water; taste, acrid. Contains 75 per cent. of a resin, *Gamboge Acid*, with 25 per cent. of a soluble gum.

Officinal Preparation.—**PILULA CAMBOGLÆ COMPOSITA** Compound Pill of Gamboge (gamboge, in powder, 1 oz. of Barbadoes aloes, in powder, 1 oz.; compound powder cinnamon, 1 oz.; hard soap, in powder, 2 oz.; syrup, a sufficient quantity). *Dose*, 5 to 10 grains.

Therapeutics.—A drastic hydragogue cathartic, frequently causing vomiting and griping. It is hardly ever given alone but generally combined with some vegetable purgative, with calomel or cream of tartar. It is useful as an antimaltic, and should always be given with ginger or some aromatic oil. In regard to its purgative effects, it may be considered intermediate between colocynth and scammony.

Adulteration.—Sometimes adulterated with starch, emulsion of which with boiling water will become granular upon the addition of iodine.

Linaceæ.

LINUM USITATISSIMUM. COMMON LINSEED OR FLAX.

Lini Farina.—**LINSEED MEAL.**—The CAKE of linseed from which the oil has been pressed, reduced to powder.

Officinal Preparation.—**CATAPLASMA LINI.**—Linseed Paste (linseed meal, 4 oz.; olive-oil, $\frac{1}{2}$ fl. oz.; boiling wa-

10 fl. oz.). Linseed meal is also contained in Cataplasma Carbonis, Conii, Sinapis, and Soda Chloratæ.

Lini Oleum.—**LINSEED OIL.**—The OIL expressed with heat from linseed.

Characters.—Viscid, yellow, with a faint odour and oleaginous taste.

Lini Semina.—**LINSEED.**—The SEEDS of *Linum Usitatissimum*. Cultivated in Britain.

Characters.—Small, pointed, oval, flat, with acute edges, smooth, shining, externally brown, internally yellowish-white; of a mucilaginous oily taste. The kernel of the seeds contains a fixed oil; the testa or envelope, a mucilage; *Palmatin* and perhaps *Stearin* are contained in the fixed oil, together with a glyceride of linoleic acid.

Officinal Preparation.—**INFUSUM LINI.**—Infusion of Linseed (linseed, 160 gr.; fresh liquorice root, sliced, 60 gr.; boiling distilled water, 10 fl. oz.). *Dose*, ad libitum.

Therapeutics.—Administered *internally*, the infusion is demulcent, and is often given in urinary and catarrhal affections; in dysentery and diarrhoea. *Externally* the poultice is applied to inflamed or suppurating parts. The oil is a useful application to scalds or burns.

Magnoliaceæ.

ILLICIUM ANISATUM. THE STAR ANISE.

An OIL is obtained from the fruit of this plant which very closely resembles the true oil of anise. It is made officinal under the name of *ANISI OLEUM*, to which oil it is added.

Malvaceæ.

Gossypium.—**COTTON WOOL.** The HAIRS of the SEED of various species of *Gossypium*, carded.

Officinal Preparations.—**PYROXYLIN.**—Gun Cotton (cotton, 1 oz.; sulphuric acid, 5 oz.; nitric acid, 5 oz.), used for preparing

COLLODIOUM.—Collodion (pyroxylin, 1 oz.; ether, 36 fl. oz.; rectified spirit, 12 fl. oz.).

COLLODIUM FLEXILE.—Flexible Collodion (collodion, 6 fl. oz.; Canada balsam, 120 gr.; castor oil, 1 fl. dr.).

Uses.—Collodion, on the evaporation of its ether, leaves a transparent film, and may be applied to inflamed or cut surfaces; it may be applied in such skin diseases as smallpox, and to chapped nipples, or to stay the haemorrhage from leech bites.

Flexible collodion does not crack, and is therefore more serviceable than the other form.

Menispermaceæ.**1.—JATEORRHIZA CALUMBA. COCCULUS PALMATUS.**

Calumba Radix.—**CALUMBA Root**.—The root, cut transversely and dried, of Jateorrhiza Calumba. From the forests of Eastern Africa, between Ibo and the Zambezi.

Dose, in powder, 5 to 20 grains.

Characters.—Slices, flat, oval or circular, about two inches in diameter, and from two to four lines thick, softer and thinner towards the centre, greyish-yellow, bitter. Calumba root contains a non-nitrogenised neutral principle termed *Calumbine*, and an Acid termed *Calumbic*, together with an alkaloid, *Berberine*.

The infusion and tincture contain calumbate of berberine. The root also contains a large quantity of starch.

Officinal Preparations.—**EXTRACTUM CALUMBÆ**.—Extract of Calumba (calumba root, cut small, 1 lb. ; distilled water, 4 oct.). *Dose, 2 to 10 grains.*

INFUSUM CALUMBÆ.—Infusion of Calumba (calumba root, cut small, $\frac{1}{2}$ oz. ; cold distilled water, 10 fl. oz.).

Dose, 1 to 2 fluid ounces.

TINCTURA CALUMBÆ.—Tincture of Calumba (calumba root, cut small, $2\frac{1}{2}$ oz. ; proof spirit, 1 oct.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

Calumba root is also contained in *Mistura Ferri Aromatica*.

Therapeutics.—Calumba is a bitter tonic and stomachic. It contains no tannic or gallic acid, and is therefore compatible with the salts of iron. The cold infusion contains no starch in solution, so that no blue colour is developed upon the addition of iodine.

2.—CISSAMPELOS PAREIRA. THE VELVET LEAF.

Pareira Radix.—**PAREIRA Root**.—The dried root of Cissampelos Pareira. Brazil.

Characters.—Cylindrical, oval or compressed pieces, entire or split longitudinally, four inches to four feet in length, and half an inch to four inches in diameter. The bark is greyish-brown, wrinkled longitudinally, and crossed transversely by annular elevations. The interior is woody, porous, with yellowish-grey, well-marked, often incomplete concentric rings and medullary rays. The taste is at first aromatic and sweetish, but afterwards intensely bitter.

Contains an active principle, *Pelosine* or *Cissampeline*,

together with resin, starch, salts, and a yellow bitter matter.
Dose, in powder, 30 to 60 grains.

Officinal Preparations.—**DECOCTUM PAREIRÆ.** Decoction of Pareira (pareira root, sliced, 1½ oz.; distilled water, 1 oct.). *Dose, 1 to 2 fluid ounces.*

EXTRACTUM PAREIRÆ.—Extract of Pareira (pareira root, in coarse powder, 1 lb.; boiling distilled water, 1 conq., or a sufficiency). *Dose, 10 to 20 grains.*

EXTRACTUM PAREIRÆ LIQUIDUM.—Liquid Extract of Pareira (pareira root, in coarse powder, 1 lb.; boiling distilled water, 1 conq., or a sufficiency; rectified spirit, 3 fl. oz.). *Dose, ½ fluid drachm to 2 fluid drachms.*

Therapeutics.—A bitter tonic. It is supposed by some authors to exert a specific action upon the mucous membrane of the bladder, and to act as a diuretic.

Papaveraceæ.

1.—PAPAVER SOMNIFERUM. THE WHITE, GARDEN, OR OPIUM POPPY.

Opium.—**OPIUM.** The JUICE, inspissated by spontaneous evaporation, obtained by incision from the unripe capsules of the poppy, *Papaver Somniferum*, grown in Asia Minor.

Characters.—Turkey Opium is in irregular lumps, weighing from four ounces to two pounds; enveloped in the remains of poppy-leaves, and usually covered with the chaffy fruits of a species of rumex; when fresh, plastic, tearing with an irregular, slightly-moist, chestnut-brown surface, shining when rubbed smooth with the finger, having a peculiar odour and bitter taste.

The following are some of the most important of the crystalline principles contained in opium:

Meconic Acid ($C_7H_4O_7$), soluble in water; forms insoluble salts with lead, baryta and lime. It yields a *blood-red* colour with the persalts of iron.

Morphia ($C_{17}H_{21}NO_3$), an alkaloid in the form of 6-sided prisms. When dry it gives a *yellow* colour, passing into *red* with strong nitric acid. It liberates iodine, and thus renders starch blue when it is added to iodic acid. Morphia and its salts, in solution, give a *greenish-blue* colour with persalts of iron.

Codeia ($C_{18}H_{21}NO_3 + H_2O$), an alkaloid, in octahedral crystals or rhombic prisms.

Papaverina ($C_{20}H_{21}NO_4$), an alkaloid in small acicular crystals. Sulphuric acid turns these crystals *blue*, and their

solution produces brilliant prisms of the insoluble hydrochlorate when great excess of hydrochloric acid is added.

Paramorphia or Thebaia ($C_{19}H_{21}NO_3$), an alkaloid which crystallises in square silvery plates.

Narcotine ($C_{22}H_{23}NO_7$), in brilliant prisms.

Narceia ($C_{23}H_{20}NO_9$), silky crystals, reddened by sulphuric acid.

Opianyl or Meconine ($C_{10}H_{10}O_4$), in acicular crystals, exists in opium, but may also be formed by the oxidation of narcotine.

Porphyroxine, a crystalline principle, becoming purple when heated with dilute hydrochloric acid.

In addition to the above bodies, several different resinous substances contained in opium, together with gummy, extractive, fatty matters, caoutchouc, a trace of volatile oil and organic salts.

Officinal Preparations of OPIUM.

CONFECTIO OPII.—Confection of Opium (compound powder of opium, 192 gr. ; syrup, 1 fl. oz.). 1 part of opium is nearly. *Dose*, 5 to 20 grains.

EMPLASTRUM OPII.—Opium Plaster (opium, in fine powder, 1 oz. ; resin plaster, 9 oz.). 1 part in 10.

ENEMA OPII.—Enema of Opium (tincture of opium, $\frac{1}{2}$ fluid ounce, mucilage of starch, 2 fl. oz.).

EXTRACTUM OPII.—Extract of Opium (opium, in thin slices, 1 lb. ; distilled water, 6 oct.). About 1 part from 2.

Dose, $\frac{1}{2}$ grain to 2 grains.

EXTRACTUM OPII LIQUIDUM.—Liquid Extract of Opium (extract of opium, 1 oz. ; distilled water, 16 fl. oz. ; rectified spirit, 4 fl. oz.). 22 gr. of the extract in 1 fl. oz., nearly. *Dose*, 10 to 40 minims.

LINIMENTUM OPII.—Liniment of Opium (tincture of opium, 2 fl. oz. ; liniment of soap, 2 fl. oz.). 1 volume tincture to 2 volumes.

PILULA IPECACUANHÆ CUM SCILLA ... 1 part in 23, nearly.

“ **PLUMBI CUM OPIO** ... 1 part in 8.

“ **SAPONIS COMPOSITA** ... 1 part in 6, nearly.

PULVIS CRETÆ AROMATICUS CUM OPIO 1 part in 40.

“ **IPECACUANHÆ COMPOSITUS** ... 1 part in 10.

“ **KINO COMPOSITUS** ... 1 part in 20.

PULVIS OPII COMPOSITUS.—Compound Powder of Opium (opium, in powder, 1½ oz. ; black pepper, in powder, 2 oz. ; ginger, in powder, 5 oz. ; caraway fruit, in powder, 6 oz. ; tragacanth, in powder, $\frac{1}{2}$ oz.). 1 part in 10.

Dose, 2 to 5 grains.

SUPPOSITORIA PLUMBI COMPOSITA. 1 gr. of opium in each suppository.

TINCTURA CAMPHORÆ COMPOSITA. 2 gr. of opium to 1 fl. oz.

TINCTURA OPII.—Tincture of Opium (opium, in coarse powder, 1½ oz.; proof spirit, 1 oct.). 33 gr. to 1 fl. oz., nearly. *Dose*, 5 to 40 minims.

TINCTURA OPII AMMONIATA.—Ammoniated Tincture of Opium (opium, in coarse powder, 100 gr.; saffron, cut small, 180 gr.; benzoic acid, 180 gr.; oil of anise, 1 fl. dr.; strong solution of ammonia, 4 fl. oz.; rectified spirit, 16 fl. oz.). 5 gr. to 1 fl. oz. *Dose*, ½ to 1 fluid drachm.

TROCHISCI OPII.—Opium Lozenges (extract of opium, 72 gr.; tincture of tolu, ½ fl. oz.; refined sugar, in powder, 16 oz.; gum acacia, in powder, 2 oz.; extract of liquorice, 6 oz.; distilled water, a sufficiency). ¼ grain of extract in each. *Dose*, 1 to 6 lozenges.

UNGUENTUM GALLÆ CUM OPIO. 32 gr. of opium to 1 oz.

VINUM OPII.—Wine of Opium (extract of opium, 1 oz.; cinnamon bark, bruised, 75 gr.; cloves, bruised, 75 gr.; sherry, 1 oct.). 22 gr. extract in 1 fl. oz., nearly.

Dose, 10 to 40 minims.

Morphiæ Acetas.—Acetate of Morphia ($C_{17}H_{19}NO_3C_2H_4O_2$) (hydrochlorate of morphia, 2 oz.; solution of ammonia, acetic acid and distilled water, of each a sufficiency; chloride of ammonium is formed, the acetic acid uniting with the morphia. *Dose*, ½ to ½ grain. The *Officinal Preparation* of this salt is

LIQUOR MORPHIE ACETATIS.—Solution of Acetate of Morphia (acetate of morphia, 4 gr.; diluted acetic acid, 8 minims; rectified spirit, 2 fl. dr.; distilled water, 6 fl. dr.). 4 gr. to the oz. *Dose*, 10 to 60 minims.

Morphiæ Hydrochloras.—Hydrochlorate of Morphia ($C_{17}H_{19}NO_3HCl_3H_2O$) (opium, sliced, 1 lb.; chloride of calcium, ¼ oz.; purified animal charcoal, ¼ oz.; diluted hydrochloric acid, 2 fl. oz., or a sufficiency; solution of ammonia and distilled water, of each, a sufficiency).

The watery solution of opium contains chiefly the meconate and sulphate of morphia and codeia; to this solution is added a strong solution of chloride of calcium, by which means meconate and sulphate of lime are thrown down, the chlorine combining with the morphia and codeia. The whole is evaporated to a solid mass, and then wrapped in calico and subjected to strong pressure in order to remove the mother liquor, in which much colouring matter is contained. Boiling water is now added to the cake to dissolve the hydrochlorate of codeia and morphia, the solution being then filtered and

washed ; it is again evaporated, and the pressed cake finally dissolved in boiling water with purified animal charcoal, to remove all trace of colouring matter, and, after filtration, slight excess of ammonia is added, which precipitates the morphia, the codeia being left in solution. The pure crystalline morphia which separates is dissolved in hydrochloric acid, and the hydrochlorate of morphia allowed to crystallise. *Dose*, $\frac{1}{2}$ to $\frac{1}{4}$ grain. The *Oficinal Preparations* of this salt are

INJECTIO MORPHÆ HYPODERMICA.—Hypodermic Injection of Morphia (hydrochlorate of morphia, 88 gr. ; solution of ammonia, acetic acid, distilled water, of each, a sufficiency).

Contains 1 gr. of acetate of morphia in 12 minimis of the injection. *Dose*, by subcutaneous injection, 1 minim to 6 minimis.

LIQUOR MORPHÆ HYDROCHLORATIS.—Solution of Hydrochlorate of Morphia (hydrochlorate of morphia, 4 gr. ; diluted hydrochloric acid, 8 minimis ; rectified spirit, 2 fl. dr. ; distilled water, 6 fl. dr.). 4 gr. to the oz.

Dose, 10 to 60 minimis.

SUPPOSITORIA MORPHÆ.—Morphia Suppositories (hydrochlorate of morphia, 6 gr. ; benzoated lard, 64 gr. ; white wax, 20 gr. ; oil of theobroma, 90 gr.).

$\frac{1}{2}$ gr. of the morphia salt in each suppository.

SUPPOSITORIA MORPHÆ CUM SAPONE.—Morphia Suppositories with Soap (hydrochlorate of morphia, 6 gr. ; glycerine of starch, 50 gr. ; curd soap, in powder, 100 gr. ; starch, in powder, a sufficiency).

$\frac{1}{2}$ gr. of the morphia salt in each suppository.

TROCHISCI MORPHÆ.—Morphia Lozenges (hydrochlorate of morphia, 20 gr. ; tincture of tolu, $\frac{1}{2}$ fl. oz. ; refined sugar, in powder, 24 oz. ; gum acacia, in powder, 1 oz. ; mucilage of gum acacia, a sufficiency ; distilled water, $\frac{1}{2}$ fl. oz.). $\frac{1}{16}$ gr. in each lozenge. *Dose*, 1 to 6 lozenges.

TROCHISCI MORPHÆ ET IPECACUANHÆ.—Morphia and Ipecacuanha Lozenges (hydrochlorate of morphia, 20 gr. ; ipecacuanha, in fine powder, 60 gr. ; tincture of tolu, $\frac{1}{2}$ fl. oz. ; refined sugar, in powder, 24 oz. ; gum acacia, in powder, 1 oz. ; mucilage of gum acacia, a sufficiency ; distilled water, $\frac{1}{2}$ fl. oz.). $\frac{1}{16}$ grain of the morphia salt and $\frac{1}{16}$ grain of ipecacuanha are contained in each lozenge.

Dose, 1 to 6 lozenges.

Therapeutics of Opium and the Morphia Salts.

When opium is taken internally in small doses, increased rapidity and fulness of the pulse are at first produced, together with very pleasant sensations and exaltation of the mental

functions. After about half an hour there follows a feeling of drowsiness, and finally sound sleep, generally accompanied by perspirations. Upon awakening, there is often headache and nausea, loss of appetite, a furred tongue, thirst and constipation. If the dose be of tolerable amount, and the patient unaccustomed to the drug, the soporific effect is soon produced. If very large, there is intense sleepiness, and difficulty in awakening the patient. Poisonous symptoms may supervene, the sleep passing into coma and stupor, the respiration becoming slower, the pulse feeble, and the pupils contracted; cold perspirations appear, and death ensues.

The influence of Opium upon the various functions and organs of the body.

Upon the *Brain and Nervous System* the influence is most powerfully marked, as is observed in the exaltation of the mental faculties, followed by sleep and stupor. The pupils may be contracted even to a pin's point. The spine is sometimes, though rarely, affected, tetanic spasms occurring.

Upon the *Digestive Organs*: appetite and digestion are impaired, thirst and constipation are caused, and the secretions from the whole mucous membrane are diminished.

Upon the *Cutaneous System*: free perspiration is produced, which may be much increased by combination of the drug with camphor, ipecacuanha, etc.

Upon the *Vascular System* the effect is first stimulant and then sedative, these effects being probably induced through the agency of the nervous system.

Upon the *Respiratory Organs* a sedative effect is produced, shown in the diminution of the respirations and the subsequently impaired oxidation of the blood.

Upon the *Excreting and Secreting Organs*—excepting that of the skin and breasts, the activity of these organs is lessened; pale-coloured faeces are produced, from the diminution of the bile, the salivary and buccal mucus and the urine often becomes scanty.

Upon the *Sexual System* a stimulating effect is produced, especially in males; and opium has been used in Eastern countries as an aphrodisiac.

When applied to the skin, pain may be allayed. If the cutis be denuded, absorption takes place, and the constitutional effects of the drug are produced. The local and general symptoms are produced when opium is applied to the mucous membrane of the rectum, either as enema or suppository. When opium or the salts of morphia are injected

hypodermically, pain and spasm are equally relieved, whether the application be close to the seat of disease or at a distance; in fact, the effect is solely produced through the blood. Contraction of the pupil does not take place when opium or morphia is applied to the conjunctiva.

Opium may be given to relieve *spasm* and *pain* in nearly every condition of the system, as in neuralgia and colic, in inflammations of different kinds, in tetanus, or during the passage of renal or biliary calculi.

In *Inflammation*, diseased action is controlled. Opium may be usefully combined with calomel in cases of inflammation, in which it is valuable by preventing the mercurial from running away by the bowels. It may also be combined with tartar emetic in various forms of inflammation. When the air passages are affected, the drug must be administered with caution. It is of great value when the intestinal tube is implicated, as in dysentery, in which it allays irritability, and checks the secretions.

In *Fever*: opium has been occasionally used with advantage in the treatment of ague.

In diseases of the *Nervous System*, opium is generally injurious when vascular action is increased; but in delirium tremens, and those allied affections in which the power of the circulation is defective, its value is very manifest.

In *Haemorrhages* opium may be usefully combined with gallic acid and acetate of lead.

In *Urinary Diseases*, for diminishing the amount of urine, as in diabetes, and for the relief of irritability of the bladder, opium is advantageously employed.

In *Mucous Discharges*, especially in *diarrhoea*, this drug is of great service.

In *Affections of the Chest* opium must be cautiously used. The cough is often relieved, but if there is considerable impairment of the respiratory functions the drug may produce dyspnoea. It also tends to lessen expectoration; but this result sometimes does harm, although it is at times desirable.

In *painful Diseases of the Bladder and Rectum*, and *Chordee*, opium may be used in the form of a suppository or as an enema; over *painfully-inflamed joints* it may be applied as a fomentation; and in *neuralgia* and *rheumatism* as a plaster or liniment.

Circumstances influencing the action of Opiates.

Age.—Children are far more susceptible than adults, and much more so than in proportion to the age. The greatest

caution must be observed in administering opium to infants and very young children.

Idiosyncrasy.—Some persons are peculiarly susceptible, and in these, instead of calm sleep, much restlessness and excitement are occasioned.

Disease.—The presence of disease often offers resisting power to the action of opium, especially when there is much pain.

Habit or Custom has the most notable effect upon the action of opium. If the dose be increased gradually, large quantities may be taken without any particular results. Garrod states that a young man was in the habit of taking 60 grains of Smyrna opium night and morning, and often an ounce to an ounce and a half of laudanum in addition during the day. The same author once had a patient who stated that he had taken 72 grains of acetate of morphia in one day, and had also swallowed a pint of laudanum. No ordinary dose of opium appeared to exert any influence upon the man.

If a large dose be resumed, after the discontinuance of the drug for some time, poisonous effects may occur.

Action of the Salts of Morphia.

These substances possess the soporific and anodyne powers of opium, and most of the valuable properties of the drug are due to them; but they have less tendency to produce headache and nausea, and are much less stimulant in their operation. Morphia possesses about 4 times the strength of opium.

Adulterations of Opium.—Opium may contain mechanical impurities, as clay, sand, bullets, stone, etc., and it may be mixed with vegetable extracts of different kinds, treacle and sugar, or it may contain much water, or a good deal of its active matter may have been extracted by water and afterwards dried.

Papaveris Capsule.—**POPPY CAPSULES.**—The nearly ripe, dried CAPSULES of Papaver Somniferum, growing native in Syria and Egypt, and cultivated in Britain.

Characters.—Globular, two or three inches in diameter, crowned by a sessile, stellate stigma.

Officinal Preparations.—**DECOCTUM PAPAVERIS.**—Decoction of Poppies (poppy capsules, bruised, 2 oz.; distilled water, 1½ oct.). Only used externally.

EXTRACTUM PAPAVERIS.—Extract of Poppies (poppy capsules, dried, freed from the seeds and coarsely powdered,

1 lb. ; rectified spirit, 2 oz. ; boiling distilled water, a sufficiency). *Dose*, 2 to 5 grains.

SYRUPUS PAPAVERIS.—Syrup of Poppies (poppy capsules, dried, freed from the seeds and coarsely powdered, 36 oz. ; rectified spirit, 16 fl. oz. ; refined sugar, 4 lb. ; boiling distilled water, a sufficiency). *Dose*, 1 fluid drachm.

Therapeutics.—The preparations of the poppy capsules act in a similar manner to those of opium, but they are much weaker and more uncertain in their action. The decoction is only used as an external application to allay pain ; the syrup is useful for the relief of cough, and as an opiate for children, but it should be employed with caution.

2.—PAPAVER RHŒAS. THE RED POPPY.

Rhœados Petala.—**RED POPPY PETALS.**—The fresh PETALS of Papaver Rhœas. From indigenous plants.

Characters.—Of a scarlet colour and poppy odour. These petals yield a red colouring matter to water, and also contain traces of the constituents of opium.

Officinal Preparation.—**SYRUPUS RHŒADOS.**—Syrup of Red Poppy (fresh red poppy petals, 13 oz. ; refined sugar, 2½ lb. ; distilled water, 1 oct., or a sufficiency ; rectified spirit, 2½ fl. oz.). *Dose*, 1 fluid drachm.

Therapeutics.—The action of the red poppy is exceedingly mild and very uncertain. It is usually employed only as a colouring agent.

Polygalaceæ.

1.—KRAMERIA TRIANDRA. RHATANY.

Krameria Radix.—**RHATANY Root.** The dried ROOT of Krameria Triandra. Imported from Peru.

Characters.—About an inch in diameter, branches numerous, long, brownish-red and rough externally, reddish-yellow internally. Contains Krameric Acid, tannin, and a red astringent matter. It is sweet and astringent to the taste, and tinges the saliva red. *Dose*, in powder, 20 to 60 grains.

Officinal Preparations.—**EXTRACTUM KRAMERIÆ.**—Extract of Rhatany (rhatany root, in coarse powder, 1 lb. ; distilled water, a sufficiency). *Dose*, 5 to 20 grains.

INFUSUM KRAMERIÆ.—Infusion of Rhatany (rhatany root, bruised, ½ oz. ; boiling distilled water, 10 fl. oz.).

Dose, 1 to 2 fluid ounces.

TINCTURA KRAMERIÆ.—Tincture of Rhatany (rhatany root, in coarse powder, 2½ oz. ; proof spirit, 1 oct.).

Dose, ½ to 2 fluid drachms.

Rhatany root, in powder, is also contained in the Pulvis Catechu Compositus.

Therapeutics.—A powerful astringent. May be given in all conditions in which tannin is indicated. It is employed in all haemorrhages and in chronic diarrhoea and dysentery. The diluted tincture or infusion is useful in sore throat, leucorrhœa and prolapsus ani.

2.—POLYGALA SENECA.

Senegæ Radix.—**SENEGA Root.**—The dried root of Polygala Senega, from North America.

Characters.—A knobby root-stock, with a branched taproot, about the thickness of a quill, twisted and keeled; bark yellowish-brown, sweetish, afterwards pungent, inducing salivation; interior woody, inert and tasteless. Contains a glucoside, *Senegin* or *Polygalic Acid*, which breaks up when boiled with diluted acid into glucose and a substance termed Sapogenin. Tannin, pectin and gum are also contained in the root. *Dose, in powder*, 20 to 60 grains.

Officinal Preparations.—**INFUSUM SENEGRÆ.**—Infusion of Senega (senega root, bruised, $\frac{1}{2}$ oz.; boiling distilled water, 10 fl. oz.). *Dose*, 1 to 2 fluid ounces.

TINCTURA SENEGRÆ.—Tincture of Senega (senega root, in coarse powder, $2\frac{1}{2}$ oz.; proof spirit, 1 oct.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

Therapeutics.—A stimulant to the mucous membranes, especially of the bronchial tubes; diaphoretic and sometimes diuretic; may be employed in chronic pneumonia and chronic bronchitis. It is occasionally useful in dysmenorrhœa. It may be combined with carbonate of ammonia and other expectorants and diaphoretics.

Adulterations.—The root of Panax Quinquefolium and Gillenia.

Ranunculaceæ.

1.—ACONITUM NAPELLUS. ACONITE. THE MONKSHOOD.

Aconiti Folia.—**ACONITE LEAVES.**—The fresh LEAVES and flowering tops of Aconitum Napellus, gathered when about one-third of the flowers are expanded, from plants cultivated in Great Britain.

Characters.—Leaves smooth, palmate, divided into five deeply-cut, wedge-shaped segments, exciting slowly, when

chewed, a sensation of tingling. Flowers numerous, irregular, deep-blue, in dense racemes.

Officinal Preparation.—**EXTRACTUM ACONITI.**—Extract of Aconite (the fresh leaves and flowering tops of aconite, 112 lb.). *Dose*, 1 to 2 grains.

Aconiti Radix.—ACONITE Root.—The dried root of *Aconitum Napellus*. Imported from Germany, or cultivated in Britain, and collected in the winter or early spring, before the leaves have appeared.

Characters.—Usually from one to three inches long, not thicker than the finger at the crown, tapering, blackish-brown; internally whitish. A minute portion, cautiously chewed, causes prolonged numbness and tingling.

Officinal Preparations.—**LINIMENTUM ACONITI.**—Liniment of Aconite (aconite root, in coarse powder, 20 oz.; camphor, 1 oz.; rectified spirit, a sufficiency).

TINCTURA ACONITI.—Tincture of Aconite (aconite root, in coarse powder, 2½ oz.; rectified spirit, 1 oct.).

Dose, 5 to 15 minimis.

Aconitia.—**ACONITIA** ($C_{30}H_{47}NO_7$).—An alkaloid obtained from aconite (aconite root, in coarse powder, 14 lb.; rectified spirit, distilled water, solution of ammonia, pure ether, and diluted sulphuric acid, of each a sufficiency). The aconite root contains resinous matter and *Aconitate of Aconitia*. These substances are extracted from the root by means of rectified spirit; upon the addition of water the resinous matter is separated from the alkaloidal salt. A solution of ammonia is now added, *Aconitate of Ammonia* being formed and aconitia precipitated, the latter being then dissolved in ether, and afterwards recovered by distillation. Sulphuric acid is now added to form sulphate of aconitia, which is afterwards decomposed by solution of ammonia, sulphate of ammonia remaining in solution and *Aconitia* being precipitated. The alkaloid so obtained is dissolved in water and finally dried between folds of blotting-paper.

Characters.—A white amorphous powder and a very active poison, which, when rubbed on the skin, produces a sensation of tingling, followed by prolonged numbness. Aconitia is contained in all parts of the aconite plant, united with *Aconitic Acid*, and in company with a base termed *Aconella*, which does not possess the active properties of the first-named alkaloid.

Officinal Preparation.—**UNGUENTUM ACONITI.**—Ointment of Aconitia (aconitia, 8 gr.: rectified spirit, ½ fl. dr.; prepared lard, 1 oz.).

Therapeutics.—In small doses aconite produces numbness and tingling of the lips. It has some repute in the treatment of neuralgia and other painful affections. It causes contraction of the pupil, and acts as a sedative to the heart's action. Some authors strongly recommend this drug as a substitute for depletory measures in the treatment of acute inflammations.

Adulterations.—The alkaloid is often impure. It may be mixed with delphinia, or may contain aconella. It is stated that $\frac{1}{10}$ of a grain of pure aconitum will destroy a dog, whereas very little effect has been produced by the action of 1 grain of the spurious alkaloid.

2.—PODOPHYLLUM PELTATUM. THE AMERICAN MAY APPLE.

Podophylli Radix.—*PODOPHYLLUM Root.*—The dried RHIZOME of *Podophyllum Peltatum*. Imported from North America.

Characters.—In pieces of variable length, about two lines thick, mostly wrinkled longitudinally, dark reddish-brown externally, whitish within, breaking with a short fracture; accompanied with pale-brown rootlets. Powder yellowish-grey, sweetish in odour, bitterish and nauseous in taste. Contains an active principle termed *Berberine*.

Dose in powder, 10 to 20 grains.

Podophylli Resina.—*RESIN OF PODOPHYLLUM* (*podophyllum root*, in coarse powder, 1 lb.; rectified spirit, 3 oct., or a sufficiency; distilled water, a sufficiency; hydrochloric acid, a sufficiency). *Dose*, $\frac{1}{2}$ to 1 grain.

Characters.—A pale greenish-brown amorphous powder.

Therapeutics.—The root is not much employed. The resin, *PODOPHYLLIN*, acts as a drastic purgative. It often causes emptying of the gall-bladder, but it is doubtful if it increases the secretion of bile. It frequently causes griping, and should be combined with *hyoscyamus*, *belladonna*, or *cannabis indica*. It is much used in congestion of the portal system, and may be given in dropes in combination with calomel and acid tartrate of potash.

Rutaceæ.

1.—BAROSMA : BETULINA, CRENULATA, AND SERRATIFOLIA.

Buchu Folia.—*BUCHU LEAVES.*—The dried LEAVES of the three varieties of *Barosma*. Imported from the Cape of Good Hope.

Characters.—Smooth, marked with pellucid dots at the indentations and apex ; possess a powerful odour and warm camphoraceous taste. The leaves of the *Barosma Betulina* are three quarters of an inch in length, obovate, with sharp cartilaginous spreading teeth, and a recurved truncated apex ; those of the *Crenulata* are about an inch long, obtuse, five-nerved, and minutely crenated ; those of the *Serratifolia* are from an inch to an inch and a half in length, are linear-lanceolate, tapering at each end, three-nerved, sharply and finely serrated ; they all contain a light brownish-yellow volatile oil, which gives odour to the leaves, and a bitter extractive matter, *Barosmin* or *Diosmin*.

Officinal Preparations :

INFUSUM BUCHU.—Infusion of Buchu (buchu leaves, bruised, $\frac{1}{2}$ oz. ; boiling distilled water, 10 fl. oz.).

Dose, 1 to 4 fluid ounces.

TINCTURA BUCHU.—Tincture of Buchu (buchu leaves, in coarse powder, $2\frac{1}{2}$ oz. ; proof spirit, 1 oct.).

Dose, 1 to 2 fluid drachms.

Therapeutics.—A slight stomachic and tonic, used chiefly for its action on the urinary organs, as in chronic catarrh of the bladder ; also diuretic and sometimes diaphoretic.

2.—GALIPEA CUSPARIA. THE ANGUSTURA BARK TREE.

Cuspariae Cortex.—CUSPARIA BARK.—The BARK of Galipea Cusparia. From tropical South America.

Characters.—In straight pieces more or less incurved at the sides, from half a line to a line in thickness, pared away at the edges ; epidermis mottled, brown or yellowish-grey ; inner surface yellowish-brown, flaky ; breaks with a short fracture ; taste bitter and slightly aromatic. When the cut surface is examined with a lens, numerous white points or minute lines are exhibited, these being raphides of oxalate of lime and liber-fibres. The inner surface of the bark, when touched with nitric acid, becomes blueish-black ; in the case of the false bark the acid produces a red colour. Contains a trace of volatile oil, resin, and a principle, *Cusparine* or *Angusturin*.

Dose in powder, 10 to 40 grains.

Officinal Preparation :

INFUSUM CUSPARIAE.—Infusion of Cusparia (cusparia bark, in coarse powder, $\frac{1}{2}$ oz. ; distilled water at 120° Fah. 10 fl. oz.)

Dose, 1 to 2 fluid ounces.

Therapeutics.—An aromatic stomachic ; given in diarrhoea,

dysentery, dyspepsia, and debility. It is employed in South America for the treatment of low malignant fevers.

Adulterations.—The bark of Strychnos Nux Vomica, or false Augustura bark, which yields strychnia and brucia ; these substances are not found in the true bark.

3.—RUTA GRAVEOLENS. THE COMMON RUE.

Ruta Oleum.—OIL OF RUE. The oil distilled from the fresh herb of Ruta Graveolens.

Characters.—Odour disagreeable, colour pale yellow, taste bitter and acrid. Contains a volatile oil which is said to consist mainly of *Euodic Aldehyde* combined with a little *Lauric Aldehyde*, also a bitter extractive matter.

Dose, 2 to 6 minimis.

Therapeutics.—A powerful topical stimulant, employed in flatulent colic. It appears to be useful in hysteria and epilepsy.

Simarubaceæ.

PICRAENA EXCELSA.

Quassiae Lignum.—QUASSIA WOOD.—The wood of Picraena Excelsa. From Jamaica.

Characters.—Billets of variable size, seldom thicker than the thigh ; wood dense, tough, yellowish white, intensely and purely bitter. Also chips of the same. Contains a neutral crystallisable principle, *Quassine*, but possesses no tannin or gallic acid, and may therefore be combined with the salts of iron. *Dose in powder*, 10 to 20 grains.

Officinal Preparations.—EXTRACTUM QUASSILE.—Extract of Quassia (quassia wood, rasped, 1 lb. ; distilled water, a sufficiency). *Dose*, 3 to 5 grains.

INFUSUM QUASSILE.—Infusion of Quassia (quassia wood, in chips, 60 gr. ; cold distilled water, 10 fl. oz.).

Dose, 1 to 2 fluid ounces.

TINCTURA QUASSILE.—Tincture of Quassia (quassia wood, in chips, $\frac{3}{4}$ oz. ; proof spirit, 1 oct.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

Therapeutics.—A pure bitter stomachic, without astringency. Used in dyspepsia and debility, and given as an enema for the destruction of thread worms.

Vitaceæ.

VITIS VINIFERA. THE GRAPE-VINE.

Uvae.—RAISINS.—The ripe FRUIT of Vitis Vinifera. Dried in the sun or by artificial heat ; imported from Spain. They

contain much *Grape Sugar*, *Acid Tartrate of Potash*, and *Malic Acid*.

Officinal Preparations.—Raisins are contained in the Compound Tincture of Cardamoms and Tincture of Senna.

Therapeutics.—Slightly refrigerant, but only used for sweetening preparations.

Zygophyllaceæ.

GUALACUM OFFICINALE.

Guaiaci Lignum.—*GUAIACUM Wood*.—The wood of Guaiacum Officinale. Imported from St. Domingo and Jamaica, and reduced by the turning-lathe to the form of a coarse powder or small chips. Contained in Decocum Sarsæ Compositum.

Guaiaci Resina.—*GUAIACUM RESIN*.—The *RESIN* of Guaiacum Officinale. Obtained from the stem by natural exudation, by incisions, or by heat.

Characters.—In large masses of a brownish or greenish-brown colour; fractured surface resinous, and translucent at the edges. Contains three *Acids*, viz., *Guaiacic*, *Guaiaretic*, and *Guaiaconic Acids*, with other vegetable matters. A solution of the resin in spirit develops a blue colour upon the inner surface of a paring of raw potato, due to the gluten being acted upon by the guaiacic acid. *Dose*, 10 to 30 grains.

Officinal Preparations.—*MISTURA GUAIACI*.—Guaiacum Mixture (guaiacum resin, in powder, $\frac{1}{2}$ oz.; refined sugar, $\frac{1}{2}$ oz.; gum acacia, powdered, $\frac{1}{2}$ oz.; cinnamon water, 1 oct.). *Dose*, $\frac{1}{2}$ to 2 fluid ounces.

TINCTURA GUAIACI AMMONIATA.—Ammoniated Tincture of Guaiacum (guaiacum resin, in powder, 4 oz.; aromatic spirit of ammonia, a sufficiency). *Dose*, $\frac{1}{2}$ to 1 fluid drachm.

Resin of guaiacum is also contained in Pilula Hydrargyri Subchloridi Composita or Compound Calomel Pill.

Therapeutics.—The resin, when internally administered, produces a sensation of heat in the throat, and in large doses induces purging. After absorption it is stimulant, alterative, and diaphoretic, and is also stated to be emmenagogue. It may be given in chronic rheumatism, especially the 'cold' variety, or that in which warmth relieves the suffering; in syphilitic periosteal affections, in gout, dysmenorrhœa, and in skin diseases.

Adulterations.—Other resins, as those of the Coniferæ, known by their turpentine odour. If the tincture be thrown into water, it becomes milky by the precipitation of the resin; this milkiness is cleared by potash if only guaiacum resin is present, but not if there are other resins.

SUB-CLASS II. CALYCIFLORA.

Amyridaceæ.

1.—CANARIUM COMMUNE?

Elemi.—*ELEMI*.—A concrete resinous exudation, the botanical source of which is undetermined, but is probably *Canarium Commune*. Chiefly imported from Manilla.

Characters.—A soft, unctuous, adhesive mass, becoming harder and more resinous by age. Of a yellowish-white colour, with a rather fragrant fennel-like odour and a bitter aromatic taste. Contains a crystalline resin, *Elemin* or *Amyrin*, together with bitter crystalline neutral principles, *Bryoidin* and *Breidine*.

Officinal Preparation.—*UNGUENTUM ELEMI*.—Ointment of *Elemi* (elemi, $\frac{1}{2}$ oz.; simple ointment, 1 oz.).

Therapeutics.—Only used externally as an application to indolent sores and boils.

2.—BALSAMODENDRON MYRRHA.

Myrrha.—*MYRRH*.—A GUM RESINOUS EXUDATION from the stem of *Balsamodendron Myrrha*. Collected in Arabia Felix and Abyssinia.

Characters.—In irregular-shaped tears or masses of variable size, somewhat translucent, of a reddish-yellow or reddish-brown colour; fractured surface, irregular and somewhat oily; odour agreeable and aromatic, taste acrid and bitter. Contains a volatile oil, *Myrrhol*, gum, a resin, *Myrrhin*, and certain salts.

Officinal Preparation.—*TINCTURA MYRRHÆ*.—Tincture of Myrrh (myrrh, in coarse powder, $2\frac{1}{2}$ oz.; rectified spirit, 1 oct.). Dose, $\frac{1}{2}$ to 1 fluid drachm.

Myrrh is also contained in *Mistura Ferri Composita*, in *Pilula Aloes et Myrrhæ*, *Pilula Assafætidæ Composita*, and *Pilula Rhei Composita*.

Therapeutics.—Internally administered, myrrh increases the secretion of the mucous membrane, especially of the bronchial tubes, and is said to possess emmenagogue, tonic and anti-spasmodic powers; it is often combined with iron and aloetic preparations in the treatment of amenorrhœa, in leucorrhœa, and mucous discharges associated with debility, and has been given in phthisis and chronic bronchitis as an expectorant. It is applied externally, as a topical stimulant, to spongy gums and aphthous sore mouth.

*Anacardiaceæ.***PISTACIA LENTISCUS.**

Mastiche.—**MASTICH.**—A RESINOUS EXUDATION obtained by incision from the stem of *Pistacia Lentiscus*. Produced in the island of Scio.

Characters.—Small, irregular, yellowish tears, brittle, becoming soft and ductile when chewed, having a faint, agreeable odour. Consists of *Mastichic Acid* and *Masticin*.

Dose, if administered internally, 20 to 40 grains.

Therapeutics.—The action is the same as that of the resin of turpentine. It is little used, but from the agreeable odour it imparts to the breath, is sometimes employed as a masticatory.

*Cucurbitaceæ.***1.—CITRULLUS COLOCYNTHIS. THE WILD CUCUMBER.**

Colocynthidis Pulpa.—**COLOCYNTH PULP.**—The dried decorticated FRUIT (pepo), freed from seeds, of *Citrullus Colocynthis*. Imported chiefly from Smyrna, Trieste, France, and Spain.

Characters.—Light, spongy, white or yellowish-white in colour, intensely bitter in taste. Contains a bitter resin, a bitter principle, mucilaginous matters, lignin, a crystallisable glucoside, *Colocynthin*, and phosphates of lime and magnesia. *Dose, in powder*, 2 to 8 grains.

Officinal Preparations.—**EXTRACTUM COLOCYNTHIDIS COMPOSITUM.**—Compound Extract of Colocynth (colocynth pulp, 6 oz. ; extract of socotrine aloes, 12 oz. ; resin of scammony, 4 oz. ; hard soap, in powder, 3 oz. ; cardamom seeds, in fine powder, 1 oz. ; proof spirit, 1 cong.). *Dose*, 3 to 10 grains.

PILULA COLOCYNTHIDIS COMPOSITA.—Compound Pill of Colocynth (colocynth pulp, in powder, 1 oz. ; Barbadoes aloes, in powder, 2 oz. ; scammony, in powder, 2 oz. ; sulphate of potash, in powder, $\frac{1}{2}$ oz. ; oil of cloves, 2 fl. dr. ; distilled water, a sufficiency). *Dose*, 5 to 10 grains.

PILULA COLOCYNTHIDIS ET HYOSCYAMI.—Pill of Colocynth and *Hyoscyamus* (compound pill of colocynth, 2 oz. ; extract of *hyoscyamus*, 1 oz.). *Dose*, 5 to 10 grains.

Therapeutics.—A drastic purgative, producing watery motions, and powerfully stimulating the pelvic organs. When given alone it is apt to gripe, and it is therefore usually combined with other purgatives and carminatives. It is useful in obstinate and habitual constipation, in relieving the portal

system in dropsical effusions, in amenorrhœa, and other uterine obstructions. Inflammation of the intestines may be occasioned by very large doses of colocynth.

Adulterations.—The extract is sometimes made with the pulp and seeds, by which a less active product is yielded.

2.—ECBALIUM OFFICINARUM. THE SQUIRTING CUCUMBER.

Ecbalii Fructus.—SQUIRTING CUCUMBER FRUIT.—The FRUIT, very nearly ripe, of *Ecbalium Officinarum*.

Characters.—A small elliptical pepo, about 1½ inches long, green, covered with soft prickles, and containing the seeds, surrounded by a juicy tissue; these, when ripe, are forcibly expelled, hence the name squirting cucumber.

Elaterium.—ELATERIUM.—A SEDIMENT from the juice of the Squirting Cucumber (squirting cucumber fruit, very nearly ripe, 1 lb.). The fruit is cut lengthwise, and the juice pressed lightly out; it is then strained through a hair sieve and set aside to deposit; the supernatant fluid is carefully poured off, and the sediment dried on porous tiles at a gentle heat.

Characters.—In light friable slightly incurved cakes, about one line thick, greenish-grey, acrid and bitter; fracture finely granular. Contains an active principle, *Elaterine*, *Elatin* or *Momordicine*, together with green resinous matter and woody fibre. *Dose*, $\frac{1}{8}$ to $\frac{1}{2}$ grain.

Officinal Preparation.—PULVIS ELATERII COMPOSITUS. Compound Powder of Elaterium (elaterium, 10 gr.; sugar of milk, 90 gr., rubbed in a mortar until reduced to fine powder and intimately mixed). *Dose*, $\frac{1}{2}$ grain to 5 grains.

Therapeutics.—A very powerful hydragogue purgative, chiefly employed in dropsical affections, especially when these are complicated with heart-disease; it is apt to cause depression and nausea unless very carefully administered.

Adulterations.—May contain starch, flour, or chalk, or but little elaterine (only 4 to 6 per cent.).

Leguminosæ.

SUB-ORDER. PAPILIONACEÆ.

1.—MYROXYLON PEREIRÆ.

Balsamum Peruvianum.—BALSAM OF PERU.—A BALSAM obtained from *Myroxylon Pereiræ*. It exudes from the trunk of the tree after the bark has been scorched and removed. From Salvador, in Central America.

Characters.—A reddish-brown or nearly black liquid, translucent in thin films; of the consistency of syrup, having a slightly bitter acrid taste, and a balsamic odour due to a neutral volatile oil, *Cinnamein*. Also contains a crystallisable solid, *Meta-Cinnamein*, with *Cinnamic Acid* and resins, and *Styracin* or *Cinnamate of Cinnamyl*.

Dose, 10 to 15 minims, and upwards, made into an emulsion with yolk of egg or mucilage.

Therapeutics.—A stimulant and expectorant, given in chronic bronchitis and rheumatism; also used in gleet, leucorrhœa, etc. Locally a stimulant, and applied to ulcers and bed-sores.

2.—MYROXYLON TOLUIFERA.

Balsamum Tolutanum.—**BALSAM OF TOLU.**—A BALSAM obtained from *Myroxylon Toluifera*. It exudes from the trunk of the tree after incisions have been made into the bark. From New Granada.

Characters.—A soft, tenacious reddish or yellowish-brown solid, with a fragrant balsamic odour.

Similar in composition to balsam of Peru, but in addition containing a volatile oil, *Tolene*. *Dose*, 10 to 20 grains.

Officinal Preparations.—**SYRUPUS TOLUTANUS.**—Syrup of Tolu (balsam of tolu, 1½ oz.; refined sugar, 2 lb.; distilled water, 1 oct., or a sufficiency). *Dose*, 1 fluid drachm.

TINCTURA TOLUTANA.—Tincture of Tolu (balsam of tolu, 2½ oz.; rectified spirit, a sufficiency to make 1 oct.). Contained in *Trochisci Acidi Tannici*; *Morphiæ*; *Morphiæ et Ipecacuanhæ*; *Opii*. *Dose*, 20 to 40 minims.

Balsam of tolu is also contained in *Tinctura Benzoini Composita*.

Therapeutics.—Identical with balsam of Peru.

3.—GLYCYRRHIZA GLABRA.

Glycyrrhiza Radix.—**LIQUORICE ROOT.**—The ROOT or underground stem, fresh and dried, of *Glycyrrhiza Glabra*. Cultivated in Britain.

Characters.—In long cylindrical branched pieces, an inch or less in diameter, pliable and tough; externally greyish-brown, internally yellow, without odour, of a sweet mucilaginous and slightly acrid taste. Contains gum, mucilage, and *Asparagine*, and a peculiar substance, *Glycyrrhizine*, or 'liquorice sugar,' which, when boiled with hydrochloric acid, yields *Glycyrretin*, a bitter resinous matter.

Officinal Preparations.—**EXTRACTUM GLYCERYRHIZÆ.**—Extract of Liquorice (liquorice root, in coarse powder, 1 lb. ; distilled water, 4 oct.). Contained in *Confectio Sennæ*, *Decoc-tum Aloes Compositum*, *Mistura Sennæ Composita*, *Tinctura Aloes* and *Trochisci Opii*.

EXTRACTUM GLYCERYRHIZÆ LIQUIDUM.—Liquid Extract of Liquorice (liquorice root, in coarse powder, 1 lb. ; distilled water, 4 oct.). *Dose*, 1 fluid drachm.

PULVIS GLYCERYRHIZÆ COMPOSITUS.—Compound Powder of Liquorice (senna, in fine powder, 2 oz. ; liquorice root, in fine powder, 2 oz. ; refined sugar, in powder, 6 oz.).

Dose, 30 to 60 grains.

Liquorice root is also contained in *Confectio Terebinthinae*, *Decoc-tum Sarsæ Compositum*, *Infusum Lini*, *Pilula Hydrar-yri* and *Pilula Ferri Iodidi*.

Therapeutics.—A demulcent, allaying cough, but more frequently used to cover the taste of other medicines. The compound powder is purgative.

4.—PTEROCARPUS MARSUPIUM.

Kino.—**KINO.**—The inspissated JUICE obtained from incisions made in the trunk of *Pterocarpus Marsupium*. Imported from Malabar.

Characters.—In small, angular, brittle, glistening, reddish-black fragments, translucent, and ruby-red on the edges, inodorous, very astringent. Tinges the saliva red when chewed. Contains red gummy matter and *Mimo-tannic* or *Kino-tannic* or *Catechu-tannic Acid*, and an astringent principle, *Catechin*. *Dose*, 10 to 30 grains.

Officinal Preparations.—**PULVIS KINO COMPOSITUS.**—Compound Powder of Kino (kino, in powder, $3\frac{1}{2}$ oz. ; opium, in powder, $\frac{1}{2}$ oz. ; cinnamon bark, in powder, 1 oz.).

Dose, 5 to 20 grains.

TINCTURA KINO.—Tincture of Kino (kino, in coarse powder, 2 oz. ; rectified spirit, 1 oct.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

Powdered Kino is also contained in *Pulvis Catechu Compositus*.

Therapeutics.—A powerful general and local astringent, useful in diarrhoea, dysentery, and relaxed sore throat. May be given wherever tannin is indicated.

5.—PHYSOSTIGMA VENENOSUM.

Physostigmatis Faba.—**CALABAR BEAN.**—The **SEED** of *Physostigma Venenosum*. Western Africa.

Characters.—About the size of a very large horse-bean, with a firm, hard, shining integument of a brownish-red, pale chocolate or ash-grey colour. Irregularly kidney-shaped, with two flat sides, and a furrow running longitudinally along its convex margin, ending in an aperture near one end of the seed. Within the shell is a kernel consisting of two cotyledons, weighing on an average about 46 grains, hard, white and pulviferous. The kernel is composed of starch, legumin, and a fatty oil, with mucilage, a little sugar, and the active principle *Physostigmine* or *Eserine*. *Dose in powder*, 1 to 4 grains.

Officinal Preparation.—**EXTRACTUM PHYSOSTIGMATICUM.**—Extract of Calabar Bean (Calabar bean, in coarse powder, 1 lb. ; rectified spirit, 4 oct.). *Dose*, $\frac{1}{16}$ to $\frac{1}{4}$ grain.

Therapeutics.—In poisonous doses Calabar bean may cause death by asphyxia or cardiac paralysis. In medium doses, or when the poison is absorbed gradually, asphyxia takes place; when the dose is large, or when the poison is directly introduced into the system, death ensues from paralysis of the heart. The asphyxia is due to 'a reduction and final abolition of the diastaltic function of the spinal cord,' and not to paralysis of the motor nerves.

This drug acts as a depressant on the heart, reducing the number of its pulsations; applied to the eye, the pupil is made to contract; this contraction may occur when internal administration of the drug has produced rapid poisoning, but it may be overlooked by the subsequent dilatation.

Physostigma has been employed internally in the treatment of strychnia-poisoning, chorea, tetanus, and general paralysis of the insane, and externally in certain conditions of the eye.

6.—PTEROCARPUS SANTALINUS.

Pterocarpi Lignum.—**RED SANDAL-WOOD.**—The **WOOD** of *Pterocarpus Santalinus*. From Ceylon.

Contained in *Tinctura Lavandulae Composita*.

Characters.—Dense, heavy billets, outwardly dark-brown, internally variegated with dark and lighter red rings, if cut transversely. Powder blood-red, of a faint, peculiar odour, and an obscurely astringent taste. Also chips of the same. Contains a dark-red crystalline principle, *Santalin* or *Santalic Acid*, also *Santal*, and a small quantity of *Kino-Tannic Acid*. Solutions of metallic salts are incompatible with sandal wood,

since acids precipitate the *Santalum*, throwing down red or violet precipitates.

Use.—To give colour to the Compound Tincture of Lavender, and through this to Liquor Arsenicalis.

7.—SAROTHAMNUS SCOPARIUS.

Scoparii Cacumina.—BROOM TOPS.—The fresh and dried TORS of Sarothamnus Scoparius. From indigenous plants.

Characters.—Straight, angular, dark-green, smooth, tough, of a bitter, nauseous taste, and of a peculiar odour when bruised. Contain a neutral principle *Scoparine*, on which the diuretic properties depend, and *Sparteia* a volatile liquid alkaloid.

Officinal Preparations.—DECOCTUM SCOPARII. — Decoction of Broom (broom tops, dried, 1 oz. ; distilled water; 1 oct.). *Dose*, 2 to 4 fluid ounces.

SUCCUS SCOPARII.—Juice of Broom (fresh broom tops, 7 lb. ; rectified spirit, a sufficiency ; one measure of spirit is added to every three of juice). *Dose*, 1 to 2 fluid drachms.

Therapeutics.—A diuretic. Chiefly used in dropsies, dependent upon cardiac disease. Causes vomiting and purging in large doses.

Sparteia is analogous to conia. It diminishes the reflex excitability of the spinal cord and paralyses the motor nerves ; and is said in addition to paralyse the cardiac inhibitory branches of the pneumogastric. Mammals are destroyed by sparteia from impairment of the activity of the respiratory centre in the medulla oblongata.

8.—ASTRAGALUS VERUS.

Tragacantha.—TRAGACANTH.—A GUMMY EXUDATION from the stems of Astragalus Verus, and possibly other species. Collected in Asia Minor.

Characters.—White or yellowish, in broad, shell-like, slightly incurved plates, tough and elastic ; very sparingly soluble in cold water ; but swelling into a gelatinous mass. Contains two distinct gums, *Arabine*, soluble in water, and *Bassorine*, insoluble in water, together with starch.

Officinal Preparations.—MUCILAGO TRAGACANTHÆ.—Mucilage of Tragacanth (tragacanth, in powder, 60 gr. ; distilled water, 10 fl. oz.).

PULVIS TRAGACANTHÆ COMPOSITUS.—Compound Powder of Tragacanth (tragacanth, in powder, 1 oz. ; gum acacia, in powder, 1 oz. ; starch, in powder, 1 oz. ; refined sugar, in powder, 3 oz.). *Dose*, 20 to 60 grains.

Powdered tragacanth is also contained in *Confecto Opii* and *Pulvis Opii Compositus*.

Therapeutics.—A simple demulcent. The mucilage is used for suspending heavy powders, as the subnitrate of bismuth. One part of tragacanth is said to render water more viscid than 25 parts of gum arabic.

SUB-ORDER. CÆSALPINIÆ.

9.—CASSIA FISTULA. THE PURGING CASSIA.

Cassiae Pulpa.—*CASSIA PULP.*—The PULP obtained from the pods of *Cassia Fistula*. Imported from the West Indies; or recently extracted from pods imported from the East or West Indies. Used in *Confectio Sennæ*.

Characters.—Blackish-brown, viscid, sweet in taste, and somewhat sickly in odour; usually containing the seeds and dissepiments. Contains pectin, sugar, mucilage, and a principle probably similar to that found in *Senna*.

Dose, of the prepared pulp, 120 grains and upwards.

Therapeutics.—A mild laxative; seldom given alone, since it is liable to produce flatulence.

10.—COPAIFERA MULTIJUGA.

Copaiba.—*COPAIVA.*—The OLEO-RESIN obtained from incisions made in the trunk of *Copaifera Multijuga*, and other species of *Copaifera*. Chiefly from the valley of the Amazon.

Characters.—About the consistence of olive oil, light yellow, transparent, with a peculiar odour, and an acrid aromatic taste. Consists of a resin, *Copaivic Acid*, and a volatile oil closely allied to oil of turpentine. Also contains a soft brown resinous matter. *Dose*, $\frac{1}{2}$ to 1 fluid drachm.

Copaibæ Oleum.—*OIL OF COPAIVA.*—The oil distilled from *Copaiva*.

Characters.—Colourless or pale yellow, with the odour and taste of *Copaiva*. *Dose*, 5 to 20 minimæ.

Therapeutics.—*Copaiba* is used very successfully in affections of the bladder and urethra, as cystitis, gleet and leucorrhœa. It should be avoided in febrile conditions, or in renal dropsy, or where there is evidence of renal congestion; but may be employed with advantage in chronic bronchitis, especially when accompanied by excessive secretion of mucus. It is powerfully diuretic. The action of the volatile oil is similar to that of the balsam.

Adulterations.—Turpentine and fixed oils. Turpentine may be detected by its odour when the suspected drug is heated on paper, and all fixed oils by a greasy ring which surrounds the resinous stain left by pure *copaiva*.

11.—HÆMATOXYLUM CAMPECHIANUM.

Hæmatoxyli Lignum.—**Logwood.**—The sliced **HEART-WOOD** of *Hæmatoxylum Campechianum*. Imported from Campeachy, Honduras, and Jamaica.

Characters.—The logs are externally of a dark colour, internally they are reddish-brown; the chips have a feeble agreeable odour, and sweetish taste; a small portion, when chewed, imparts to the saliva a dark pink colour. Contains an active principle, *Hæmatoxyline*, together with tannin and resin, and ordinary wood constituents. When fused with caustic potash *Hæmatoxyline* is converted into Pyrogallic Acid.

Officinal Preparations.—**DECOCUTUM HÆMATOXYLI.**—Decoction of Logwood (logwood, in chips, 1 oz.; cinnamon bark, in coarse powder, 60 gr.; distilled water, 1 oct.).

Dose, 1 to 2 fluid ounces.

EXTRACTUM HÆMATOXYLI.—Extract of Logwood (log-wood, in fine chips, 1 lb.; boiling distilled water, 1 cong.). *Dose*, 10 to 30 grains.

Therapeutics.—Chiefly used as an astringent in diarrhoea, chronic dysentery, and some forms of atonic dyspepsia, and often given to children.

12.—CASSIA LANCEOLATA. CASSIA OBOVATA.

Senna Alexandrina.—**ALEXANDRIAN SENNA.**—The LEAFLETS of *Cassia Lanceolata* and *Cassia Obovata*. Imported from Alexandria; carefully freed from the flowers, pods, and leaf-stalks of the same, and from the leaves, flowers, and fruit of *Solenostemma Argel*.

Characters.—Lanceolate or obovate leaflets, about an inch long, unequally oblique at the base, brittle, greyish-green, of a faint peculiar odour, and mucilaginous sweetish taste. The unequally oblique base and absence of bitterness distinguish the senna from the Argel leaves, which are, moreover, stiffer and thicker.

Officinal Preparations.—**CONFECTIO SENNÆ.**—Confection of Senna (senna, in fine powder, 7 oz.; coriander fruit, in fine powder, 3 oz.; figs, 12 oz.; tamarind, 9 oz.; cassia pulp, 9 oz.; prunes, 6 oz.: extract of liquorice, $\frac{1}{2}$ oz.; refined sugar, 30 oz.; distilled water, a sufficiency).

Dose, 60 to 120 grains.

INFUSUM SENNÆ.—Infusion of Senna (senna, 1 oz.; ginger, sliced, 30 grs.; boiling distilled water, 10 fl. oz.). *Dose*, 1 to 2 fluid ounces. Contained in

MISTURA SENNÆ COMPOSITA.—Compound Mixture of Senna (sulphate of magnesia, 4 oz.; extract of liquorice, $\frac{1}{2}$ oz.;

tincture of senna, $2\frac{1}{2}$ fl. oz.; compound tincture of cardamoms, 10 fl. oz.; infusion of senna, a sufficiency).

Dose, 1 to $\frac{1}{2}$ fluid ounce.

SYRUPUS SENNAE.—Syrup of Senna (senna, broken small, 16 oz.; oil of coriander, 3 minims; refined sugar, 24 oz.; distilled water, 5 oct., or a sufficiency; rectified spirit, 2 fl. oz.).

Dose, 1 to 4 drachms.

TINCTURA SENNAE.—Tincture of Senna (senna, broken small, $2\frac{1}{2}$ oz.; raisins, freed from seeds, 2 oz.; caraway fruit, bruised, $\frac{1}{2}$ oz.; coriander fruit, bruised, $\frac{1}{2}$ oz.; proof spirit, 1 oct.). *Dose*, 1 to 4 fluid drachms.

13.—CASSIA ELONGATA.

Senna Indica.—TINNIVELLY SENNA.—The LEAFLETS of Cassia Elongata. From plants cultivated in Southern India. May be used in place of the Alexandrian Senna.

Characters.—About two inches long, lanceolate, acute, unequally oblique at the base, flexible, entire, green, without any admixture; odour and taste those of Alexandrian Senna.

Senna has a faint odour, and a nauseous taste, and contains *Cathartine* or *Cathartic Acid*, which, when boiled with alcohol and hydrochloric acid, is resolved into sugar and *Cathartogenic Acid*. It also contains a yellow colouring matter identical with Chrysophanic Acid, and, according to some, a crystalline sugar, *Catharto-Mannite*.

Therapeutics.—Senna is a somewhat brisk purgative; appears to act chiefly on the small intestines; sometimes creates griping and nausea if given alone, and is therefore usually combined with salines, as tartrate of potash or Epsom salts and some aromatic, forming the 'black draught.'

14.—TAMARINDUS INDICA.

Tamarindus.—TAMARIND.—The preserved PULP of the fruit of Tamarindus Indica. Imported from the West Indies. Contained in Confectio Sennæ.

Characters.—A brown, sweetish, sub-acid pulp, preserved in sugar, containing strong fibres and brown shining seeds, each enclosed in a membranous coat. Contains sugar, gum, pectin, free citric, tartaric, and malic acids, acid tartrate of potash, etc. The seeds contain much tannin. By boiling the pulp with milk, a whey may be obtained.

Dose, $\frac{1}{2}$ ounce and upwards.

Therapeutics.—A very slight laxative; refrigerant, on account of the acid contained, and useful when infused, as a cooling drink in febrile affections.

SUB-ORDER. MIMOSÆ.

15.—ACACIA.

Acacia Gummi.—**GUM ACACIA.**—A GUMMY EXUDATION from the stems of one or more undetermined species of *Acacia*.

Characters.—In spheroidal tears, usually from half an inch to an inch in length, nearly colourless, and opaque, from numerous minute cracks, or in fragments with shining surfaces; brittle; bland and mucilaginous in taste. Contains *Gummic* or *Arabic Acid*, or *Arabin*, combined with magnesia, lime and potash; also small quantities of malate of calcium, chlorides of calcium, and potassium, with traces of iron, silicon, and phosphate of calcium.

Officinal Preparation.—**MUCILAGO ACACIE.**—Mucilage of Gum Acacia (gum acacia, in small pieces, 4 oz.; distilled water, 6 fl. oz.).

Gum Acacia is also contained in *Mistura Cretæ*, *Mistura Guaiaci*, *Pulvis Amygdalæ Compositus*, *Pulvis Tragacanthæ Compositus*, and in all the *Trochisci*.

16.—INDIGOFERA.

Indigo.—A BLUE PIGMENT prepared from various species of *Indigofera*.

Characters.—In cubical plates of an intense blue colour, without odour, and having a metallic taste. When rubbed with a smooth hard body it assumes a coppery hue. Contains a blue colouring matter, *Indigotin*. Indigo is introduced into the appendix of the *Pharmacopœa* for making the

Solution of Sulphate of Indigo (indigo, dry and in fine powder, 5 gr.; sulphuric acid, 10 fl. oz.).

Characters.—Contains a compound of sulphuric acid and indigotin, called *Sulphindigotic Acid*. This solution is used as a test for free chlorine in hydrochloric acid and liquor soda chloratæ. Free chlorine destroys the blue colour.

Therapeutics.—Indigo has been employed in epilepsy, but its action as a therapeutic agent demands further investigation.

Myrtaceæ.

1.—CARYOPHYLLUS AROMATICUS.

Caryophyllum.—**CLOVES.**—The dried unexpanded FLOWER-BUDS of *Caryophyllus Aromaticus*. Cultivated in Penang, Bencoolen, and Amboyna.

Dose, in powder, 5 to 20 grains or more.

Characters.—About six lines long, dark reddish-brown, plump, and heavy, consisting of a nearly cylindrical body surmounted by four teeth and a globular head, with a strong, fragrant odour, and a bitter spicy pungent taste. Emits oil when indented with the nails. Contains a volatile oil, consisting of a hydrocarbon isomeric with oil of turpentine, holding in solution *Eugenic Acid*, a crystalline body, *Caryophylline*, and *Eugenine*. Cloves also contain salicylic acid and a variety of tannin; they are therefore incompatible with salts of iron.

Officinal Preparation.—**INFUSUM CARYOPHYLLI.**—Infusion of Cloves (cloves, bruised, $\frac{1}{2}$ oz.; boiling distilled water, 10 fl. oz.). *Dose*, 1 to 4 fluid ounces.

Cloves are also contained in *Infusum Aurantii Compositum*, *Mistura Ferri Aromatica*, and *Vinum Opii*.

Caryophylli Oleum.—**OIL OF CLOVES.**—The oil distilled in Britain from cloves.

Characters.—Colourless when recent, but gradually becoming red-brown, having the odour of cloves and a pungent spicy taste. Sinks in water.

Contained in *Confectio Scammonii*, *Pilula Colocynthidis Composita*, and *Pilula Colocynthidis et Hyoscyami*.

Therapeutics.—Cloves and the oil are aromatic, carminative and stimulant; they are employed in dyspepsia, to relieve flatulence, and to allay vomiting in pregnancy. The oil may be used as an adjunct to purgatives, or locally to stay the pain of carious teeth.

2.—MELALEUCA MINOR.

Cajuputi Oleum.—**OIL OF CAJUPUT.**—The oil distilled from the leaves of *Melaleuca Minor*. Imported from Batavia and Singapore.

Characters.—Very mobile, transparent, of a fine pale, blueish-green colour. Has a strong disagreeable odour, and a warm aromatic taste, and leaves a sensation of coldness in the mouth. When distilled, a colourless oil comes over which constitutes two thirds of the crude oil and is really *Hydrate of Cajuputene*.

Officinal Preparation.—**SPIRITUS CAJUPUTI.**—Spirit of Caju-put (oil of cajuput, 1 fl. oz.; rectified spirit, 49 fl. oz.).

Dose, $\frac{1}{2}$ to 1 fluid drachm.

Oil of cajuput is also contained in **Linimentum Crotonis**.

Therapeutics.—A powerful general and topical stimulant and antispasmodic, useful in hysteria, cholera, and flatulent colic, also in low states of the system and in chronic rheumatism. Mixed with olive-oil, it is used externally over gouty and chronic rheumatic parts.

Adulteration.—Copper. Camphor dissolved in oil of rosemary and coloured by copper has been stated to be substituted for the genuine oil.

3.—PUNICA GRANATUM.

Granati Radicis Cortex.—**POMEGRANATE Root-BARK.**—The dried BARK of the root of *Punica Granatum*. Obtained from the south of Europe.

Characters.—In quills or fragments of a greyish-yellow colour externally, yellow internally, having a short fracture, little odour, and an astringent slightly bitter taste. The rind contains extractive and mucilaginous matters, and tannin. The root-bark also contains tannin and a principle called *Punicine*.

Officinal Preparation.—**DECOCTUM GRANATI RADICIS.**—Decoction of Pomegranate Root (pomegranate root bark, sliced, 2 oz.; distilled water, 2 oct.).

Dose, 1 to 2 fluid ounces.

Therapeutics.—The rind is somewhat astringent. It may be used when tannin is indicated. The root is also slightly astringent, and has been used to expel tape-worms.

4.—EUGENIA PIMENTA. THE ALLSPICE-TREE.

Pimenta.—**PIMENTO.**—The dried unripe BERRIES of *Eugenia Pimenta*. West Indies.

Characters.—Of the size of a small pea, brown, rough, crowned with the teeth of the calyx, yellowish within, and containing two dark-brown seeds. Odour and taste aromatic, hot, and peculiar. Contains a fixed oil, resin, a large quantity of tannin, and a volatile oil identical with oil of cloves.

Officinal Preparation.—**AQUA PIMENTÆ.**—Pimento Water (pimento, bruised, 14 oz.; water, 2 cong.; distilled to one gallon).

Pimenta is also contained in **Syrupus Rhamni**.

Pimentæ Oleum.—**OIL OF PIMENTO.**—The oil distilled in Britain from pimento.

Characters.—Colourless or slightly-reddish when recent, but becoming brown by age, having the odour and taste of pimento. Sinks in water.

Therapeutics.—The same as cloves.

Rhamnaceæ.

RHAMNUS CATHARTICUS. THE COMMON BUCK-THORN.

Rhamni Succus.—BUCKTHORN JUICE.—The recently expressed JUICE of the ripe berries of *Rhamnus Catharticus*.

Characters.—Of a green colour and nauseous odour. Contains sugar, mucilage, malic acid and two principles, *Rhamninae* and *Rhamneginæ*, both resolvable into crystalline sugar and *Rhamnetin*.

Officinal Preparation.—SYRUPUS RHAMNI.—Syrup of Buck-thorn (buckthorn juice, 4 oct. ; ginger, sliced, $\frac{1}{4}$ oz. ; pimento, bruised, $\frac{1}{2}$ oz. ; refined sugar, 5 lb. or a sufficiency ; rectified spirit, 6 fl. oz.). *Dose*, 1 fluid drachm.

Therapeutics.—A brisk hydragogue purgative, often attended by nausea and griping ; the syrup was at one time occasionally given to children, but its use is now almost entirely abandoned.

Rosaceæ.

1.—AMYGDALUS COMMUNIS. THE ALMOND TREE.

Amygdala Amara.—BITTER ALMOND.—The SEED of the bitter almond tree, *Amygdalus Communis*. Brought chiefly from Mogadore.

Characters.—Similar to the sweet almond in appearance, but rather broader and shorter ; has a bitter taste, and when rubbed with water emits a characteristic odour.

Amygdala Dulcis.—SWEET ALMOND.—The SEED of the sweet almond tree, *Amygdalus Communis*. Cultivated about Malaga.

Characters.—Above an inch in length, lanceolate, acute, with a clear cinnamon-brown seed-coat, and a bland sweetish nutty-flavoured kernel. Does not evolve the odour of bitter almonds when bruised with water.

Both varieties of almond yield on expression the Oleum Amygdalæ, together with *Emulsine* or *Synaptase*, sugar, gum, woody fibre, and inorganic salts, especially phosphates of potash, lime, and magnesia. In addition to these the bitter almond contains *Amygdaline*.*

* See 'Hydrocyanic Acid. Part I.'

Officinal Preparations.—**MISTURA AMYGDALÆ.**—Almond Mixture (compound powder of almonds, 2½ oz.; distilled water, 1 oct.). *Dose*, 1 to 2 fluid ounces.

PULVIS AMYGDALÆ COMPOSITUS.—Compound Powder of Almonds (sweet almonds, 8 oz.; refined sugar, in powder, 4 oz.; gum acacia, in powder, 1 oz.).

Amygdala Oleum.—The oil expressed from bitter and sweet almonds.

Characters.—Pale yellow, nearly inodorous, or having a nutty odour, with a bland oleaginous taste. It is contained in the following Unguenta: Cetacei; Hydrargyri Oxidi Rubri; Plumbi Subacetatis Compositum; Unguentum Simplex and the preparations in which that ointment is contained.

Therapeutics.—Sweet almonds are nutritive and demulcent. They are commonly used as vehicles for the administration of other remedies. In large doses the fixed oil is purgative. The bitter almonds in large quantities are poisonous, and their employment is not to be recommended, since the amount of prussic acid generated is very variable.

An almond-cake, made from the non-amylaceous powder of the sweet almond, has been proposed as a substitute for bread in the treatment of Diabetes Mellitus.

2.—BRAYERA ANTHELMINTICA.

Cusso.—**KOUSSO.**—THE FLOWERS and tops of *Brayera Anthelemtica*. Collected in Abyssinia.

Characters.—Flowers small, reddish-brown, on hairy stalks, outer limb of calyx five-parted, the segments oblong or oblong-lanceolate, reticulated. Contains a volatile oil, gum, sugar, tannic acid, wax, and a crystallisable principle, *Koussine* or *Kosin*. Has a tea-like odour, and when viewed en masse is yellowish-green. *Dose*, ¼ to ½ ounce.

Officinal Preparation.—**INFUSUM CUSSO.**—Infusion of Kousso (kousso, in coarse powder, ½ oz.; boiling distilled water, 8 fl. oz.). *Dose*, 4 to 8 fluid ounces.

3.—PRUNUS LAUROCERASUS. THE COMMON CHERRY-LAUREL.

Laurocerasi Folia.—**CHERRY-LAUREL LEAVES.**—The fresh LEAVES of *Prunus Laurocerasus*.

Characters.—Ovate-lanceolate or elliptical, distantly toothed, furnished with glands at the base, smooth and

shining, deep green, on strong short footstalks; emitting a ratafia odour when bruised. On distillation with water they yield some hydrocyanic acid and a volatile oil, neither of which pre-exist in the leaves. Only half as much hydrocyanic acid is yielded in winter as in July and August.

Officinal Preparation.—**AQUA LAUROCRASSI.**—Laurel Water (fresh leaves of common cherry-laurel, 1 lb.; water, 2½ oct.; distil one pint of liquid). *Dose*, 5 to 30 minimis.

4.—PRUNUS DOMESTICA. THE PLUM.

Prunum.—**PRUNE.**—The dried DRUPE of *Prunus Domestica*. From Southern Europe. It is contained in *Confectio Sennæ*. Has a sweet, somewhat austere taste. Contains free malic acid, glucose, gum, pectin, oxalate of lime, and a purgative principle, the nature of which is unknown. Its action is laxative.

5. (a) ROSA CANINA. THE DOG-ROSE.

Rosæ Caninæ Fructus.—**FRUIT OF THE DOG-ROSE.**—**HIPS.**—The ripe FRUIT of *Rosa Canina* and other indigenous allied species.

Characters.—The ripe fruit deprived of hairy seeds (achenes). An inch or more in length, ovate, scarlet, smooth, shining; taste sweet, sub-acid, pleasant. The pulp contains malic and citric acids, malates and citrates of potash and lime, tannic acid, sugar, gum, and a trace of volatile oil.

Officinal Preparation.—**CONFECTIO ROSÆ CANINÆ.**—Confection of Hips (hips, deprived of their seeds, 1 lb.; refined sugar, 2 lbs.).

Also contained in Pilula Quinise and used as a basis for other pill masses.

(b) ROSA CENTIFOLIA. THE HUNDRED-LEAVED OR CABBAGE-ROSE.

Rosæ Centifoliae Petala.—**CABBAGE-ROSE PETALS.**—The fresh PETALS, fully expanded, of *Rosa Centifolia*. From plants cultivated in Britain.

Characters.—Taste sweetish, bitter, and faintly astringent; odour roseate; both readily imparted to water. The odour is due to a volatile faint straw-coloured oil termed *Otto*, or *Attar*, of *Roses*, which is prepared in India. The petals also contain colouring matter, a slight laxative principle, traces of tannic, gallic, malic, and tartaric acids, fat, resin, and sugar.

Officinal Preparation.—**AQUA ROSÆ.**—Rose-water (fresh petals of the hundred-leaved rose, 10 lb.—or an equivalent quantity of the petals preserved while fresh with common salt—water, 2 conq. Distil one gallon). Contained in *Mistura Ferri Composita* and *Trochisci Bismuthi*. *Dose*, ad libitum.

Therapeutics.—Used chiefly as a vehicle for medicines, lotions, and collyria.

(c) ROSA GALLICA. THE RED ROSE.

Rosæ Gallicæ Petala.—**RED ROSE PETALS.**—The fresh and dried unexpanded PETALS of *Rosa Gallica*. From plants cultivated in Britain.

Characters.—Colour fine purplish-red, retained after drying; taste bitterish, feebly acid and astringent; odour roseate, developed by drying. Contain red colouring matter, a trace of volatile oil, a little fat, sugar, tannic and gallic acids, and a glucoside, *Quercitrin* (the crystallisable yellow colouring matter of *Quercus Tinctoria*), which, when boiled with diluted sulphuric acid, is resolved in *Quercetin* and glucose. An infusion of the petals becomes green with alkalies and red with acids.

Officinal Preparations.—**CONFECTIO ROSÆ GALLICÆ.**—Confection of Roses (fresh red-rose petals, 1 lb.; refined sugar, 3 lb.). Contained in *Pilulæ: Aloës Barbadensis*; *Aloës et Assafetidæ*; *Aloës et Ferri*; *Aloës et Myrrhæ*; *Aloës Socotrinae*; *Ferri Carbonatis*; *Hydrargyri*; *Plumbi cum Opio*.

INFUSUM ROSÆ ACIDUM.—Acid Infusion of Roses (dried red-rose petals, broken up, $\frac{1}{2}$ oz.; diluted sulphuric acid, 1 fl. dr.; boiling distilled water, 10 fl. oz.)

Dose, 1 to 2 fluid ounces.

SYRUPUS ROSÆ GALLICÆ.—Syrup of Red Roses (dried red-rose petals, 2 oz.; refined sugar, 30 oz.; boiling distilled water, 1 oct.). *Dose*, 1 fluid drachm.

Therapeutics.—Slightly astringent. The confection is used as a pill basis, and is also applied to aphthous conditions of the mouth in the form of a linctus. The acid infusion is chiefly employed as a gargle, an astringent, or an agreeable vehicle for more powerful medicines, as Epsom salts, sulphate of quinia, etc. The syrup is used as a colouring agent.

Umbelliferæ.

I. DOREMA AMMONIACUM.

Ammoniacum. — **AMMONIACUM.** — A GUM-RESINOUS EXUDATION from Dorema Ammoniacum. Collected in Persia and the Punjab.

Characters. — In tears or masses ; the tears from two to eight lines in diameter, pale cinnamon-brown, breaking with a smooth, shining, opaque white surface ; the masses composed of agglutinated tears ; hard and brittle when cold, but readily softening with heat. Has a faint odour, and a bitter, acrid, nauseous taste. Rubbed with water it forms a nearly white emulsion. Contains a resin and a volatile oil which is destitute of sulphur. It yields a little *Resorcin* on fusion with potash. Ammoniacum, when rubbed with camphor, at once forms a mass which is suitable for pills. *Dose*, 10 to 20 grains.

Officinal Preparations. — **EMPLASTRUM AMMONIACI CUM HYDRARGYRO.** — Ammoniacum and Mercury Plaster (ammoniacum, 12 oz. ; mercury, 3 oz. ; olive oil, 1 fl. dr. ; sublimed sulphur, 8 gr.).

MISTURA AMMONIACI. — Ammoniacum Mixture (ammoniacum, in coarse powder, $\frac{1}{2}$ oz. ; distilled water, 8 fl. oz.). *Dose*, $\frac{1}{2}$ to 1 fluid ounce.

Ammoniacum is also contained in Emplastrum Galbani, Pilula Scille Composita, and Pilula Ipecacuanhae cum Scilla.

Therapeutics. — Ammoniacum in large doses may cause nausea ; after absorption its action seems chiefly directed to the mucous membranes, especially of the bronchial tubes. It is a powerful stimulating expectorant, very useful in some cases of chronic bronchitis. Externally applied, local irritation is produced, and the Emplastrum Ammoniaci cum Hydrargyro may cause a papular or even pustular eruption. Ammoniacum is often applied to indolent tumours and chronically enlarged joints.

2.—ANETHUM GRAVEOLENS. THE DILL.

Anethi Fructus. — Dill Fruit. — The FRUIT of Anethum Graveolens. Cultivated in England, or imported from middle and Southern Europe.

Characters. — Oval, flat, about a line and a half in length, with a pale membranous margin, odour aromatic, taste warm, somewhat bitter.

Officinal Preparation. — **AQUA ANETHI.** — Dill water (dill fruit, bruised, 1 lb. ; water, 2 cong. ; distil 1 gallon).

Dose, 1 to 2 fluid ounces. For infants, 1 to 2 fluid drachms.

Anethi Oleum.—**OIL OF DILL.**—The oil distilled in Britain from dill fruit.

Characters.—Colour pale yellow, odour pungent, taste acrid, sweetish. Resembles oil of caraway, and is said to consist of a hydrocarbon, *Anethene*, and an Oil ($C_{10}H_{14}O$) identical with *Carvol*. **Dose**, 2 to 5 minims.

Therapeutics.—Aromatic, carminative, and stimulant. Useful as an adjunct to purgatives, and employed in the flatulence of children.

3. PIMPINELLA ANISUM. ANISE.

Anisi Oleum.—**OIL OF ANISE.**—The oil distilled in Europe from the fruit of *Pimpinella Anisum*. And the oil distilled in China from the fruit of *Illicium Anisatum*, Star Anise.*

Characters.—Colourless or pale yellow; with the odour of anise and a warm sweetish taste. Concretes at 50° Fah. Consists of two portions, about $\frac{1}{4}$ th being a liquid oil isomeric with oil of turpentine ($C_{10}H_{16}$), and $\frac{3}{4}$ ths an oil solidifying below 50° and termed *Anethol* or *Anise-Camphor*, which is easily oxidised, yielding substances containing the radical *Anisyl* ($C_8H_7O_2$). By the action of dilute nitric acid upon oil of anise, *oxalic* and *Anisic Acids* are formed, together with *Anisyl Hydrate*, which possesses the odour of new hay.

Dose, 2 to 5 minims.

Officinal Preparation.—**ESSENTIA ANISI.**—Essence of Anise (oil of anise, 1 fl. oz.; rectified spirit, 4 fl. oz.).

Dose, 10 to 20 minims.

Oil of anise is also contained in *Tinctura Camphoræ Composita* and *Tinctura Opii Ammoniata*.

Therapeutics.—Stimulant, aromatic, and carminative; used for the relief of flatulence.

4.—NARTHEX ASSAFETIDA.

Assafetida.—**ASSAFETIDA.**—A GUM RESIN obtained by incision from the living root of *Narthex Assafetida*. In Afghanistan and the Punjab.

Characters.—In irregular masses, partly composed of tears, moist or dry. The colour of a freshly-cut or broken piece is opaque white, but gradually becomes purplish-pink and finally dull-yellowish or pinkish-brown. Taste bitter, acrid; odour fetid, alliaceous and persistent. Almost entirely dissolves in rectified spirit, and its pulverisation is facilitated by rubbing with carbonate of ammonia. Contains a volatile oil consisting

* See page 29.

of Sulphide of *Allyl*, gum, and a resin yielding *Ferulaic Acid*. *Dose*, 5 to 20 grains.

Officinal Preparations.—**ENEMA ASSAFETIDÆ**.—Enema of *Assafetida* (*assafetida*, 30 grains; distilled water, 4 fl. oz.).

PILULA ASSAFETIDÆ COMPOSITA.—Compound Pill of *Assafetida* (*assafetida*, 2 oz.; *galbanum*, 2 oz.; *myrrh*, 2 oz.; treacle, by weight, 1 oz.). *Dose*, 5 to 10 grains.

TINCTURA ASSAFETIDÆ.—Tincture of *Assafetida* (*assafetida*, in small fragments, 2½ oz.; rectified spirit, a sufficiency). *Dose*, ½ to 1 fluid drachm.

Assafetida is also contained in *Pilula Aloes et Assafetidæ* and *Spiritus Ammonia Fœtidus*.

Therapeutics.—A powerful stimulant and antispasmodic to the nervous system, especially valuable in convulsive hysterical affections; also used in asthma and pertussis. May be employed as an enema in *tympanites*. Useful as an expectorant in some forms of chronic bronchitis. Garrod considers *assafetida* one of the most valuable remedies of the *Materia Medica*, and far above all other ordinary antispasmodics. He attributes its value to the contained sulphur oil. *Galbanum* and *ammoniacum* possess no true antispasmodic powers when given alone, since they are devoid of the sulphur oil.

Adulterations.—Mechanical impurities, as stones and sand, which are occasionally present.

5.—CARUM CARUI. THE CARAWAY.

Carui Fructus.—**CARAWAY FRUIT**.—The dried **FRUIT** of *Carum Carui*. Cultivated in England and Germany.

Characters.—Fruit usually separating into two parts, which are about two lines long, curved, tapering at each end, brown, with five paler longitudinal ridges; having an agreeable aromatic odour and spicy taste. Contains a volatile oil consisting of two liquid portions, the oxidised *Carvol* ($C_{10}H_{14}O$), and the unoxidised, *Carvone* ($C_{10}H_{16}$).

Officinal Preparations.—**AQUA CARUI**.—Caraway Water (caraway fruit, bruised, 1 lb.; water, 2 cong. Distil one gallon.). Caraway fruit is also contained in *Confectio Opii*, *Confectio Piperis*, in *Pulvis Opii Compositus*, *Tinctura Cardamomi Composita*, and *Tinctura Sennæ Composita*.

Dose, 1 to 2 fluid ounces.

Carui Oleum.—**Oil of CARAWAY**.—The **OIL** distilled in Britain from Caraway fruit.

Characters.—Colourless or pale yellow, odour aromatic, and taste spicy. Contained in *Confectio Scammonii* and *Pilula Aloes Barbadianus*. *Dose*, 2 to 5 minims.

Therapeutics.—Similar to Anise and Dill.

6.—CONIUM MACULATUM. THE SPOTTED HEMLOCK.

Conii Folia.—HEMLOCK LEAVES.—The fresh LEAVES and young BRANCHES of Conium Maculatum; also the leaves separated from the branches and carefully dried; gathered from wild British plants when the fruit begins to form.

Characters.—Fresh leaves decomound, smooth, arising from a smooth stem with dark purple spots; dried leaves of a full green colour and characteristic odour. The leaf rubbed with solution of potash emits strongly the mouse-like odour of conia. *Dose in powder, 2 to 8 grains.*

Officinal Preparations.—**CATAPLASMA CONII.**—Hemlock Poultice (hemlock leaf, in powder, 1 oz.; linseed meal, 3 oz.; boiling water, 10 fl. oz.).

EXTRACTUM CONII.—Extract of Hemlock (the fresh leaves and young branches of hemlock, 112 lb.). *Dose, 2 to 6 grains. Used in the two following, viz., in*

PILULA CONII COMPOSITA.—Compound Pill of Hemlock (extract of hemlock, 2½ oz.; ipecacuanha, in powder, ½ oz.; treacle, a sufficiency). *Dose, 5 to 10 grains. And in*

VAPOR CONII.—Inhalation of Conia (extract of hemlock, 60 gr.; solution of potash, 1 fl. dr.; distilled water, 10 fl. dr.; mix). Put 20 minims of the mixture on a sponge, in a suitable apparatus, so that the vapour of hot water passing over it may be inhaled.

SUCCUS CONII.—Juice of Hemlock (fresh leaves of hemlock, 7 lb.; rectified spirit, a sufficiency). *Dose, ½ to 1 fluid drachm.*

Conii Fructus.—Hemlock Fruit.—The dried ripe FRUIT of Conium Maculatum.

Characters.—Broadly ovate, compressed laterally; half fruit (mericarp), with five-waved or crenated edges. Reduced to powder and rubbed with solution of potash, emit strongly the odour of conia.

Officinal Preparation.—**TINCTURA CONII.**—Tincture of Hemlock (hemlock fruit, bruised, 2½ oz.; proof spirit, 1 oct.); 54½ grains to 1 fl. oz. *Dose, 20 to 60 minims.*

Both the leaves and fruit of Conium contain a non-poisonous volatile oil, together with *Conia* or *Cicutine* ($C_8H_{15}N$), a volatile liquid alkaloid, combined with *Conic Acid* as *Conate of Conia*.

Conia is a strongly alkaline fluid, and neutralises strong acids. With *nitric acid* it gives a *blood-red* colour; by *sulphuric acid* it is turned *purplish-red*, changing to *green*; when gently warmed with *hydrochloric acid* it forms a *greenish-blue* crystalline mass. *Conia* produces a greasy stain on paper which

disappears on heating ; it is always accompanied by *Methyl-conia* ($\text{CH}_3\text{C}_8\text{H}_{14}\text{N}$) and *Conhydrine* ($\text{C}_8\text{H}_{15}\text{N}, \text{H}_2\text{O}$).

The vapour of conia is inflammable.

Therapeutics.—Hemlock owes its physiological effects to the conia and methyl-conia it contains. The strength of the preparations of the plant is extremely uncertain, since these alkaloids are very volatile and prone to decomposition.

Conia is said to cause paralysis of the voluntary muscles by a selective action upon the end-organs of the motor nerves. The brain, the spinal cord, the muscular tissue, and the afferent nerves remain unaffected. Gradual enfeeblement of the respiratory muscles takes place, and death by asphyxia results from their ultimate paralysis. The heart's action is not directly interfered with.

Methyl-conia acts specifically upon the spinal cord as well as upon the end-organs of the motor nerves, first exalting and then abolishing the reflex function of that cord. From this circumstance the action of pure conia is considerably modified, since it is invariably associated with methyl-conia.

If a full dose of any active preparation of conium is given to a healthy man, weakness of the legs and staggering ensue ; early implication of the third cranial nerve takes place, causing ptosis and dilatation of the pupil ; the cerebral functions are unaffected, but the muscular debility increases, drowsiness and sleep ensue ; and coldness of the extremities, nausea and pallor are not unfrequently observed.

Conium is employed to allay muscular spasm in *paralysis agitans*, mercurial tremor, chorea, and the severe twitchings of the legs which sometimes take place in *paraplegia*. In strychnia poisoning and tetanus the drug is useless.

It may be employed as the vapor conia to relieve the cough of bronchitis, pertussis, or phthisis. It has been advocated in acute mania, and was once said to be a remedy for cancer, in which it often diminishes the pain and improves the general health.

Dr. John Harley considers the succus the only reliable preparation of conium for internal use, but he also states that even this cannot always be depended upon, since the proportion of the active principle contained is very variable.

7.—CORIANDRUM SATIVUM. CORIANDER.

Coriandri Fructus.—**CORIANDER FRUIT.**—The dried ripe fruit of *Coriandrum Sativum*. Cultivated in Britain.

Charactera.—Globular, nearly as large as white pepper,

beaked, finely-ribbed, yellowish-brown ; has an agreeable aromatic odour and flavour. Contained in Confectio Sennæ, Mistura Gentianæ, Syrupus Rhei, Tinctura Rhei, and Tinctura Sennæ. *Dose, of the powdered fruit, 10 to 30 grains or more.*

Coriandri Oleum.—**OIL OF CORIANDER.**—The oil distilled in Britain from coriander fruit.

Characters.—Yellowish, having the odour of coriander. *Dose, 2 to 5 minimis.*

Therapeutics.—Similar to Anethum, Anisum, and Carum Carui. Seldom given alone.

8.—FENICULUM DULCE. FENNEL.

Feniculi Fructus.—**FENNEL FRUIT.**—The FRUIT of Feniculum Dulce. Imported from Malta.

Characters.—About three lines long and one line broad ; elliptical, slightly curved, beaked, having eight pale-brown longitudinal ribs, the two lateral being double ; taste and odour aromatic. Contains a volatile oil identical with oil of anise, and possessing the characteristic odour of the fruit.

Officinal Preparation.—**AQUA FENICULLI.**—Fennel Water (fennel fruit, bruised, 1 lb. ; water, 2 cong. ; distil one gallon). *Dose, 1 to 2 fluid ounces.*

Therapeutics.—As of Anethum, Anisum, etc.

9.—FERULA GALBANIFLUA (?).

Galbanum.—**GALBANUM.**—A GUM-RESIN, derived from Ferula Galbaniflua (?). Imported from India and the Levant.

Characters.—In irregular tears about the size of a pea, usually agglutinated into masses ; of a greenish-yellow colour, translucent, having a strong disagreeable odour, and an acrid bitter taste.

Contains a volatile oil destitute of sulphur and isomeric with oil of turpentine ; also a resin which yields a substance termed *Umbelliferone* ($C_9H_6O_3$). *Dose, 10 to 30 grains or more.*

Officinal Preparation.—**EMPLASTRUM GALBANI.**—Galbanum Plaster (galbanum, 1 oz. ; ammoniacum, 1 oz. ; yellow wax, 1 oz. ; lead plaster, 8 oz.).

Galbanum is also contained in Pilula Assafœtidæ Composita.

Therapeutics.—Similar to assafœtida, but possessing far less powerful antispasmodic properties. Probably more allied in its action to ammoniacum. It is sometimes used as an expectorant, and is given in amenorrhœa from its supposed stimulating action on the uterus. Externally it is somewhat stimulating, and is employed to discuss indolent tumours.

10.—EURYANGIUM SUMBUL (?)

Sumbul Radix.—SUMBUL Root.—The dried transverse sections of the root of Euryangium Sumbul (?). Imported from Russia and also from India.

Characters.—The pieces are nearly round, from $2\frac{1}{2}$ to 5 inches in diameter, and from $\frac{3}{4}$ to $1\frac{1}{2}$ inch in thickness. They are covered on the outer edge with a dusky-brown rough bark, frequently beset with short bristly fibres. The interior is porous, consisting of easily-separated irregular fibres. It has a strong odour, resembling that of musk. The taste is sweetish, becoming after a time bitterish and balsamic. That brought from India differs from the Russian, being closer in texture, more dense and firm, and of a reddish tint. The root contains a resin, a little volatile oil, *Umbelliferone*, *Angelic Acid*, and a trace of *Valerianic Acid*. The resin is converted by potash into *Sambulic Acid*, which smells strongly of musk.

Officinal Preparation.—*TINCTURA SUMBUL.*—Tincture of Sumbul (sumbul root, in coarse powder, $2\frac{1}{2}$ oz. ; proof spirit, 1 oct.). Dose, 10 to 30 minimis.

Therapeutics.—A nervine stimulant similar to Valerian. Used in Russia for cholera and febrile disease of an adynamic or typhoid type. Has been advocated in chorea, epilepsy, and other nervous disorders, and is said to be sometimes beneficial in delirium tremens. The resin separated from the root has been occasionally used in doses of from $\frac{1}{2}$ grain upwards.

Sub-Class III. COROLLIFLORA. Asclepiadaceæ.

HEMIDESMUS INDICUS.

Hemidesmi Radix.—HEMIDESMUS INDICUS.

Hemidesmus Indicus. Imported from India.

Characters.—Yellowish-brown, cylindrical, tortuous, rowed, and with annular cracks, having a fragrant odour, a very agreeable flavour. Contains a volatile, crystalline substance, *Hemidesmic Acid*.

Officinal Preparation.—*SYRUPUS HEMIDESMI.*—Syrupus Hemidesmus root, bruised, 4 oz. ; refined 28 oz. ; boiling distilled water, 1 oct.). Dose, 1 fluid drachm. Sometimes used as a substitute for sarsaparilla in the treatment of syphilitic cutaneous eruptions, e.g. India. The syrup must be regarded more as a flavoring agent, the amount of the drug containing

ordinary dose of that preparation being very small. If the real action of hemidesmus is required, a decoction may be made from the root, *Dose*, from 1 to 4 fluid ounces.

Atropaceæ.

1.—ATROPA BELLADONNA. THE DEADLY NIGHTSHADE.

Belladonna Folia.—**BELLADONNA LEAVES.**—The fresh LEAVES, with the branches to which they are attached, of *Atropa Belladonna*; also the leaves separated from the branches and carefully dried; gathered from wild or cultivated British plants when the fruit has begun to form.

Characters.—Leaves alternate, three to six inches long, ovate, acute, entire, smooth, the uppermost in pairs and unequal. The expressed juice, or an infusion, dropped into the eye, dilates the pupil. Contain *Atropia*, and, in addition to ordinary ingredients, *Asparagin*, a neutral substance converted by alkalies or acids into ammonia and *Aspartic Acid*.

Officinal Preparations.—**EXTRACTUM BELLADONNÆ.**—Extract of Belladonna (the fresh leaves and young branches of belladonna, 112 lb.) *Dose*, $\frac{1}{2}$ to 1 grain. Contained in the two following :

EMPLASTRUM BELLADONNÆ.—Belladonna Plaster (extract of belladonna, 3 oz.; resin plaster, 3 oz.; rectified spirit, 6 fl. oz.).

UNGUENTUM BELLADONNÆ.—Ointment of Belladonna (extract of belladonna, 80 grs.; prepared lard, 1 oz.).

SUCCUS BELLADONNÆ.—Juice of Belladonna (fresh leaves and young branches of belladonna, 7 lb.; rectified spirit, a sufficiency). *Dose*, 5 to 15 minimis.

TINCTURA BELLADONNÆ.—Tincture of Belladonna (belladonna leaves, in coarse powder, 1 oz.; proof spirit, 1 oct.).

Dose, 5 to 20 minimis.

Belladonna Radix.—**BELLADONNA Root.**—The dried ROOT of *Atropa Belladonna*. Cultivated in Britain or imported from Germany.

Characters.—From one to two feet long, and from half an inch to two inches thick, branched and wrinkled, brownish-white. An infusion dropped into the eye dilates the pupil. Contains *Atropia*, together with *Belladonnin*, an amorphous alkaloid, and a red colouring matter, *Atrosin*.

Officinal Preparations.—**LINIMENTUM BELLADONNÆ.**—Liniment of Belladonna (belladonna root, in coarse powder, 20 oz.; camphor, 1 oz.; rectified spirit, a sufficiency).

Atropia.—**ATROPIA, C₁₇H₂₁NO₃.**—An alkaloid obtained from Belladonna (belladonna root, recently dried and in coarse powder, 2 lb. ; rectified spirit, 10 oct. ; slaked lime, 1 oz. ; diluted sulphuric acid, and carbonate of potash, of each a sufficiency ; chloroform, 3 fl. oz. ; purified animal charcoal, a sufficiency ; distilled water, 10 fl. oz.).

The root is digested with rectified spirit to exhaust it of the *Malate of Atropia*: upon the addition of lime, *Malate of Lime* is formed and *Atropia* liberated ; sulphuric acid is added to form *Sulphate of Atropia*; carbonate of potash is then added to neutralisation in order to separate the resinous matter, which is subsequently removed by filtration. Carbonate of potash is again added in sufficient quantity to produce alkalinity, *Sulphate of Potash* being formed, and *Atropia* liberated and removed by chloroform ; the chloroform is distilled off, and the *Atropia* purified by solution in spirit, digestion with animal charcoal, filtration and evaporation.

Characters and Tests.—In colourless acicular crystals, sparingly soluble in water, more readily soluble in alcohol and ether. Its solution in water has an alkaline reaction, and a bitter taste, powerfully dilates the pupil, and gives a *citron-yellow* precipitate with terchloride of gold. It is an active poison, and is decomposed by strong hydrochloric acid, or by caustic alkalies, baryta or lime water, into *Tropic Acid* ($C_9H_{10}O_3$) and *Tropine* ($C_8H_{15}NO$).

Officinal Preparations.—**LIQUOR ATROPIÆ.**—Solution of Atropia (atropia, 4 gr. ; rectified spirit, 1 fl. dr. ; distilled water, 7 fl. dr.).

UNGENTUM ATROPIÆ.—Ointment of Atropia (atropia, 8 gr. ; rectified spirit, $\frac{1}{2}$ fl. dr. ; prepared lard, 1 oz.).

Atropiæ Sulphas.—Sulphate of Atropia (atropia, 120 gr. ; distilled water, 4 fl. dr. ; diluted sulphuric acid, a sufficiency).

Characters.—A colourless powder, insoluble in chloroform, and which, applied in solution to the eye, dilates the pupil. A powerful poison.

Officinal Preparation.—**LIQUOR ATROPIÆ SULPHATIS.**—Solution of Sulphate of Atropia (sulphate of atropia, 4 gr. ; distilled water, 1 fl. oz.)

Therapeutics.—The physiological action of belladonna depends exclusively upon the amount of atropia it contains. The pigeon, dog and rabbit are peculiarly insusceptible to its action ; 15 grains being the minimum fatal dose for the rabbit.

Applied topically to the web of the frog, contraction of the arterioles is caused, succeeded by stasis of blood in the veins,

soon extending to the arteries—anæmia, followed by congestion. Applied to the conjunctiva, the pupil becomes dilated and accommodation impaired. It is probable these effects are due to the terminal filaments of the 3rd cranial nerve (motor oculi) being paralysed. When atropia is introduced into the blood, the same effects are produced upon the iris and ciliary muscle, but they are then not unilateral, but symmetrical.

When a small dose of atropia is injected into the jugular vein of a dog, the (a) cardiac and (b) respiratory movements are accelerated, and the (c) blood-pressure in the arteries is raised. The first of these events (a) is due to a selective action upon the cardiac inhibitory filaments of the vagi, which are paralysed; the second (b) to stimulation of the respiratory centre in the medulla oblongata; the third (c) to contraction of the systemic arterioles, in all probability through the medium of the sympathetic. Upon the spinal cord a paralysing and stimulant action is exerted, the former greater in amount than the latter.

In dogs atropia causes purging and diuresis. It is eliminated by the urine, in which its presence may be easily shown. It arrests all other secretions, as saliva, milk, etc. The secretion of the submaxillary gland is arrested by paralysis of the terminal filaments of the chorda tympani.

The action of atropia is said to be antagonistic to that of opium, Calabar bean and hydrocyanic acid.

If belladonna be taken by a healthy man, the first symptoms observed are dryness of the throat, thirst, and difficulty of swallowing; if the drug be continued, or given in larger doses, the pupils dilate, and vision for near objects becomes indistinct. Further effects are—an erythematous rash, somewhat like that of scarlatina, dryness of skin, quickened pulse, vertigo, sleeplessness, excitement passing into delirium, and accompanied by confusion of speech and hallucinations. The bowels may be relaxed and micturition become frequent. Beyond this, great muscular weakness and tremors may occur, with hurried breathing, convulsions, coma and death.

Belladonna and atropia may be applied topically to relieve pain, to moderate inflammatory action, to check secretion, and for some ophthalmic purposes:

*1. Belladonna plasters and fomentations are useful in certain forms of hyperæsthesia and neuralgia, especially when due to spinal irritation.

2. Applied to the female breast, Belladonna checks the *secretion of milk*. Applied to the skin of any part of the body,

* Garrod.

it checks sweating, e.g., the sweating of the head in rickets (Ringer).

3. It is said to exert a favourable influence on carbuncles, and even to check suppuration if applied early enough to the inflamed part.

4. In ophthalmic practice it is used :

(a.) To dilate the pupil for ophthalmoscopic examination. In early stages of central cataract, to admit more light into the eye. In iritis, to prevent posterior synechia. To counteract the effect of Calabar bean.

(b.) To paralyse accommodation, as in hypermetropia.

(c.) To reduce intra-ocular tension, as in some forms of corneal ulcer, and glaucomatous conditions of the globe. It is worthy of notice that atropia, applied to the conjunctival surface, may be absorbed; sometimes, though rarely, giving rise to constitutional effects.

As a constitutional remedy, belladonna may be given in the form of extract, tincture, or juice; the sulphate of atropia should be reserved for subcutaneous injection.

Belladonna is administered :

1. As an antidote in poisoning by opium, Calabar bean or hydrocyanic acid.

2. As a laxative in chronic constipation.

3. To check incontinence of urine in children and paraplegic patients.

4. To check profuse sweating. Dr. Ringer found that the hypodermic injection of $\frac{1}{300}$ grain of atropia arrested sweating for a whole night in a case of phthisis.

5. In the idiopathic (non-mercurial) salivation of children.

6. In many nervous disorders; epilepsy, chorea, pertussis, laryngismus stridulus, asthma.

7. To allay pain and spasm in neuralgic affections, gasterdynia, colic, and spasm of the different sphincters, as of the uterus, bladder, and rectum.

8. To diminish polyuria in diabetes mellitus and insipidus. Atropia is unsuitable for internal administration; if prescribed, the dose should be from $\frac{1}{300}$ gr. carefully increased. Dr. Garrod has seen very uncomfortable symptoms resulting from $\frac{1}{10}$ gr. If injected under the skin, the amount should be from $\frac{1}{300}$ gr., upwards. The sulphate of atropia is employed only for the preparation of its solution, which is much used by ophthalmic surgeons, because it is free from alcohol: The extract or ointment of belladonna smeared round the eye may be used for the same purpose.

Incompatibles.—The caustic fixed alkalies, as potash and

soda, which, when in contact with preparations of atropia or belladonna, destroy their activity by decomposing the atropia contained in them.

2.—HYOSCYAMUS NIGER. HENBANE.

Hyoscyami Folia.—**HYOSCYAMUS LEAVES.**—The fresh LEAVES, with the branches to which they are attached, of *Hyoscyamus Niger*; also the leaves separated from the branches and carefully dried; gathered from wild, or cultivated British, biennial plants, when about two-thirds of the flowers are expanded.

Characters.—Leaves sinuated, clammy, and hairy. The fresh herb has a strong unpleasant odour, and a slightly acrid taste, both which nearly disappear on drying. The fresh juice, dropped into the eye, *dilates* the pupil.

All parts of the plant contain an alkaloid, *Hyoscyamia* united with *Malic Acid*, and closely allied to atropia. This alkaloid is an oily liquid concreting into warty crystals, having a tobacco-like odour, and soluble in water, alcohol and ether; it is converted by caustic alkalies into *Hyoscina*, a volatile alkaloid, and *Hyoscinic Acid*, a crystallisable substance, with the odour of benzoic acid.

Officinal Preparations.—**EXTRACTUM HYOSCYAMI.**—Extract of *Hyoscyamus* (the fresh leaves and young branches of *hyoscyamus*, 112 lbs.). Contained in Pilula Colocynthidis et *Hyoscyami*. *Dose*, 5 to 10 grains.

SUCCUS HYOSCYAMI.—Juice of *Hyoscyamus* (fresh leaves and young branches of *hyoscyamus*, 7 lb.; rectified spirit, a sufficiency). *Dose*, $\frac{1}{2}$ fluid drachm to 1 fluid drachm.

TINCTURA HYOSCYAMI.—Tincture of *Hyoscyamus* (*hyoscyamus* leaves, in coarse powder, 2½ oz.; proof spirit, 1 oct.).

Dose, $\frac{1}{2}$ to 1 fluid drachm.

Therapeutics.—Appears to act like stramonium and belladonna, but is much milder, and chiefly used as a sedative in those excited conditions of the nervous system in which opium is not advisable. It is often given to allay irritation of the bladder, to diminish pain, to obviate the griping of purgative medicines, to ease cough, and to relax spasm in many diseases. May be used in the place of belladonna to dilate the pupil. Henbane has been observed, when administered internally in large doses, to produce similar symptoms to those of stramonium and belladonna; viz., dilatation of the pupil and presbyopia, dryness of the fauces and mouth, delirium, eruption on the skin and loss of power over the bladder in cases of slight paraplegia.

Incompatibles.—Caustic fixed alkalies, as soda or potash, in contact with henbane preparations, destroy the activity of the latter by decomposing the hyoscyamia.

3.—DATURA STRAMONIUM. THE THORN APPLE.

Stramonii Folia.—**STRAMONIUM LEAVES.**—The dried LEAVES of Datura Stramonium. Collected from plants in flower, cultivated in Britain.

Characters.—Large, ovate, sinuous, deeply cut; of a heavy odour, which is strongest while they are drying, and of a mawkish faintly bitter nauseous taste.

Stramonii Semina.—**STRAMONIUM SEEDS.**—The ripe SEEDS of Datura Stramonium.

Characters.—Brownish-black, reniform, flat, rough; in taste feebly bitter and mawkish; inodorous, unless bruised, when they emit a peculiar heavy smell.

All parts of the plant contain an alkaloid, *Daturia*, identical with *Atropia*, and united with *Malic acid*.

Officinal Preparations.—**EXTRACTUM STRAMONII.**—Extract of Stramonium (stramonium seeds, in coarse powder, 1 lb.; ether, 1 oct., or a sufficiency; distilled water and proof spirit, of each a sufficiency). *Dose*, $\frac{1}{2}$ to $\frac{1}{2}$ grain.

TINCTURA STRAMONII.—Tincture of Stramonium (stramonium seeds, bruised, $2\frac{1}{2}$ oz.; proof spirit, 1 oct.).

Dose, 10 to 30 minims.

Therapeutics.—Apparently identical with belladonna. It is supposed to be antispasmodic to the respiratory organs, and has been much used in asthma, chiefly in the form of smoke from the burning leaf. The extract has been given in convulsive coughs, and as an anodyne in gastralgia and other painful affections.

Incompatibles.—The caustic fixed alkalies, as potash and soda, which decompose the active principle.

The leaves of **DATURA TATULA**, a plant of the same genus as stramonium, have been employed, as a cigar or in a pipe, for the treatment of spasmodic asthma. The activity of this plant is no doubt due to the same alkaloid as that of stramonium.

4.—NICOTIANA TABACUM. VIRGINIAN TOBACCO.

Tabaci Folia.—**LEAF TOBACCO.**—The dried LEAVES of Nicotiana Tabacum. Cultivated in America.

Characters.—Large mottled-brown ovate or lanceolate acuminate leaves, bearing numerous short glandular hairs; having a peculiar heavy odour and nauseous bitter acrid taste;

yielding, when distilled with solution of potash, an alkaline fluid having the peculiar odour of *Nicotia*, and thrown down by perchloride of platinum and tincture of galls. Contains, in addition to *Nicotia*, a concrete volatile oil, *Nicotianin*, or tobacco-camphor. The leaves should not be manufactured, since in the process they undergo many chemical changes.

Officinal Preparation.—**ENEMA TABACI.**—Enema of Tobacco (leaf tobacco, 20 gr. ; boiling water, 8 fl. oz.). Contains about the quantity of the drug safe to administer at a time.

Therapeutics.—Internally administered, a powerful sedative, especially affecting the heart; frequently causes diuresis, and has been given in dropsy. Its employment is sometimes followed by dangerous depression. Externally, tobacco is a powerful irritant, occasionally used in the form of snuff, as an errhine in head affections; also in the form of smoke, as an expectorant and sedative in some varieties of asthma. Frequent use of the drug greatly influences the susceptibility of individuals. Use establishes tolerance, as in the case of opium.

Caprifoliaceæ.

SAMBUCUS NIGRA. THE ELDER TREE.

Sambuci Flores.—**ELDER FLOWERS.**—The dried FLOWERS of *Sambucus Nigra*. From indigenous plants.

Characters.—Flowers small, white, fragrant, crowded in large cymes. Yield, on distillation, a *volutile oil*, easily altered by exposure to air, and containing a hydrocarbon, *Sambucene*, and perhaps a little camphor.

Officinal Preparation.—**AQUA SAMBUCI.**—Elder-Flower Water (fresh elder flowers, separated from the stalks, 10 lb. ; or an equivalent quantity of the flowers preserved while fresh with common salt ; water, 2 conq. ; distil one gallon).

Dose., 1 fluid ounce to 2 fluid ounces.

Therapeutics.—The flowers are gently stimulant, and are used in the form of ointment by heating the flowers in hot lard. The Aqua is used as an agreeable vehicle for medicines or lotions.

Cinchonaceæ.

1.—UNCARIA GAMBIR.

Catechu Pallidum.—**PALE CATECHU.**—An EXTRACT of the leaves and young shoots of *Uncaria Gambir*. Prepared at Singapore, and in other places in the Eastern Archipelago.

Characters.—In cubes or masses formed of coherent cubes;

the former about an inch in diameter, externally brown, internally ochre-yellow or pale brick-red, breaking easily, with a dull earthy fracture. Taste bitter, very astringent and mucilaginous, succeeded by slight sweetness. Entirely soluble in boiling water, and containing no starch.

Catechu consists of *Catechu-tannic* or *Mimo-tannic Acid*, and *Catechin* or *Catechic Acid*. The former acid gives a green precipitate with ferric salts, and catechin is converted by alkalies into *Japonic* and *Rubinic Acids*. *Dose*, 10 to 30 grains.

Officinal Preparations.—**INFUSUM CATECHU.** — Infusion of Catechu (pale catechu, in coarse powder, 160 gr. ; cinnamon bark, bruised, 30 gr. ; boiling distilled water, 10 fl. oz.).

Dose, 1 to 2 fluid ounces.

PULVIS CATECHU COMPOSITUS. — Compound Powder of Catechu (pale catechu, in powder, 4 oz. ; kino, in powder, 2 oz. ; rhatau root, in powder, 2 oz. ; cinnamon bark, in powder, 1 oz. ; nutmeg, in powder, 1 oz.).

Dose, 20 to 40 grains.

TINCTURA CATECHU. — Tincture of Catechu (pale catechu, in coarse powder, 2½ oz. ; cinnamon bark, bruised, 1 oz. ; proof spirit, 1 oct.). *Dose*, ½ to 2 fluid drachms.

TROCHISCI CATECHU. — Catechu Lozenges (pale catechu, in powder, 720 gr. ; refined sugar, in powder, 25 oz. ; gum acacia, in powder, 1 oz. ; mucilage of gum acacia, 2 fl. oz. ; distilled water, a sufficiency). Each lozenge contains one grain of catechu. *Dose*, 1 to 6 lozenges.

Therapeutics. — A powerful astringent ; used chiefly in diarrhoea, and some forms of dyspepsia, attended by pyrosis ; also employed in haemorrhages and mucous discharges. Externally used as an ointment. May be chewed, and the juice swallowed gradually, in relaxation of the uvula and palate, etc., and in some forms of hoarseness.

2. (a.)—CINCHONA CALISAYA.

Cinchona Flavæ Cortex. — **YELLOW CINCHONA BARK.** — The BARK of Cinchona Calisaya. Collected in Bolivia and Southern Peru.

Characters.—In flat pieces, uncoated, or deprived of the periderm, rarely in coated quills, from six to eighteen inches long, one to three inches wide, and two to four lines thick, compact and heavy ; outer surface brown, marked by shallow irregular longitudinal depressions ; inner surface tawny-yellow, fibrous ; transverse fracture, shortly and finely fibrous. Powder cinnamon-brown, somewhat aromatic, persistently bitter.

100 grains of this bark should yield not less than 2 grains of Quinine. *Dose, in powder, 10 to 60 grains.*

Officinal Preparations.—**DECOCTUM CINCHONÆ FLAVÆ.**—Decoction of Yellow Cinchona (yellow cinchona bark, in coarse powder, 1½ oz. ; distilled water, 1 oct.).

Dose, 1 to 2 fluid ounces.

EXTRACTUM CINCHONÆ FLAVÆ LIQUIDUM.—Liquid Extract of Yellow Cinchona (yellow cinchona bark, in coarse powder, 1 lb. ; distilled water, a sufficiency ; rectified spirit, 1 fl. oz.).

Dose, 10 to 30 minimis.

INFUSUM CINCHONÆ FLAVÆ.—Infusion of Yellow Cinchona (yellow cinchona bark, in coarse powder, ½ oz. ; boiling distilled water, 10 fl. oz.). *Dose, 1 to 2 fluid ounces.*

TINCTURA CINCHONÆ FLAVÆ.—Tincture of Yellow Cinchona (yellow cinchona bark, in moderately fine powder, 4 oz. ; proof spirit, 1 oct.). *Dose, ½ to 2 fluid drachms.*

Quinia Sulphas.—**SULPHATE OF QUINIA,** $C_{20}H_{24}N_2O_2H_2SO_4 \cdot 7H_2O$.—The SULPHATE of an ALKALOID, prepared from Yellow Cinchona Bark, and from the Bark of Cinchona Lancifolia. Prepared as follows : (yellow cinchona bark, in coarse powder, 1 lb. ; hydrochloric acid, 3 fl. oz. ; distilled water, a sufficiency ; solution of soda, 4 oct. ; diluted sulphuric acid, a sufficiency).

The yellow bark contains *Quinia* and *Cinchonia* united to an acid, *Kinic* or *Quinic Acid*, as *Kinate* or *Quinate* of *Quinia* and *Cinchonia*. Upon the addition of *Hydrochloric Acid*, Hydrochlorates of these alkaloids are formed, which are then precipitated by a solution of soda, chloride of sodium being produced. *Sulphuric Acid* is finally added, *Sulphates of Quinia* and *Cinchonia* being formed, of which the former separates first.

Tests.—Solutions of quinia present a blue fluorescent appearance ; and if treated with ammonia and fresh strong chlorine water, produce a deep emerald-green colour due to the presence of a substance termed *Thalleioquin*.

Dose, 1 to 5 grains, but larger doses may be given under certain circumstances.

Officinal Preparations.—**FERRI ET QUINIAE CITRAS.**—Citrate of Iron and Quinia (solution of persulphate of iron, 4½ fl. oz. ; sulphate of quinia, 1 oz. ; diluted sulphuric acid, 12 fl. dr. ; citric acid, 3 oz. ; solution of ammonia and distilled water, of each a sufficiency).

Characters.—Thin scales of a greenish golden-yellow colour, somewhat deliquescent, and soluble in cold water. Taste bitter and chalybeata. *Dose, 5 to 10 grains.*

* **PILULA QUINIA.**—Pill of Quinia (sulphate of quinia, 60 gr., confection of hips, 20 gr.). *Dose*, 2 to 10 grains.

TINCTURA QUINIA.—Tincture of Quinia (sulphate of quinia, 160 gr. ; tincture of orange-peel, 1 oct.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

* **TINCTURA QUINIA AMMONIATA.**—Ammoniated Tincture of Quinia (sulphate of quinia, 160 gr. ; solution of ammonia, $2\frac{1}{2}$ fl. oz. ; proof spirit, $17\frac{1}{2}$ fl. oz.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

VINUM QUINIA.—Wine of Quinia (sulphate of quinia, 20 gr. ; citric acid, 30 gr. ; orange wine, 1 oct.).

Dose, $\frac{1}{2}$ to 1 fluid ounce.

(b.)—CINCHONA CONDAMINEA.

Cinchona Pallidae Cortex.—**PALE CINCHONA BARK.**—The BARK of Cinchona Condaminea. Collected about Loxa, in Ecuador.

Characters.—From half a line to a line thick, in single or double quills, which are from six to fifteen inches long, two to eight lines in diameter, brittle, easily splitting longitudinally, and breaking with a short transverse fracture ; outer surface brown and wrinkled, or grey and speckled, with adherent lichens, with or without numerous transverse cracks ; inner surface bright-orange or cinnamon-brown ; powder pale-brown, slightly bitter, very astringent.

Dose, in powder, 10 to 60 grains.

200 grains of this bark should yield not less than 1 grain of alkaloids.

Officinal Preparation.—**TINCTURA CINCHONÆ COMPOSITA.**—Compound Tincture of Cinchona (pale cinchona bark, in moderately fine powder, 2 oz. ; bitter orange peel, cut small and bruised, 1 oz. ; serpentary root, bruised, $\frac{1}{2}$ oz. ; saffron, 60 gr. ; cochineal, in powder, 30 gr. ; proof spirit, 1 oct.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

Pale Cinchona Bark is also contained in *Mistura Ferri Aromatica*.

(c.)—CINCHONA SUCCIRUBRA.

Cinchona Rubra Cortex.—**RED CINCHONA BARK.**—The BARK of Cinchona Succirubra. Collected on the Western slopes of Chimborazo.

* These preparations are copied literally from the "British Pharmacopeia," but it is almost impossible to prepare either of them by the methods specified, in consequence of the large bulk of quinia in the former, and since in the latter the ammonia precipitates the quinia.

Characters.—In flat or incurved pieces, less frequently in quills, coated with the periderm, varying in length from a few inches to two feet, from one to three inches wide, and two to six lines thick, compact and heavy; outer surface brown or reddish-brown, rarely white from adherent lichens, rugged or wrinkled longitudinally, frequently warty, and crossed by deep transverse cracks; inner surface redder; fractured surface often approaching to brick-red; transverse fracture finely fibrous; powder red-brown; taste bitter and astringent.

100 grains of this bark should yield not less than 1·5 grain of alkaloids. *Dose*, in powder, 10 to 60 grains.

The chief constituents of Cinchona Barks are :

Alkaloids	and	Acid Principles.
Quinia.		Quinic or Kinic Acid.
Quinidia.		Cincho-tannic Acid.
Quinamia.		Cincho-fulvic Acid.
Cinchonia.		Quinovin.
Cinchonidia.		Quinovic Acid.

Roughly speaking, the *Yellow* bark yields the most Quinia; the *Pale* the most Cinchonia, and the *Red* about equal quantities of Quinia and Cinchonia.

Therapeutics of the Cinchona Barks and Quinia.

The CINCHONA BARKS are tonic, antiperiodic, antipyretic, and astringent. They are employed in fevers, malarious diseases, neuralgias, debility, etc.

Experiments have shown that QUINIA possesses the following properties :

1. It is fatal to the lowest forms of vegetable and animal life.
 2. It exerts a similar inhibitory action on many fermentations, arresting the solvent action of the gastric juice, that of emulsion upon amygdalin, the vinous and butyric fermentations.
 3. Weakens or arrests the spontaneous movements of the white blood corpuscles, checking their emigration from the vessels.
 4. In large doses paralyses the heart, causing a sudden fall of blood pressure, convulsions and death.
 5. Has a powerful sedative action upon the brain and spinal cord, finally abolishing reflex movements.
 6. Lowers the heat of the body in healthy animals.
- QUINIA is medicinally employed :
1. As a *Tonic*. Increases the appetite and checks the sweating of debility.

2. As an *Antiperiodic*. Given in agues, miasmatic neuralgia, malarious remittents, splenic and hepatic congestions, etc.
3. Exceedingly useful in neuralgias *not* of malarial origin.
4. As an *Antipyretic*. Doses of 5—20 grains notably reduce the temperature in pyrexia arising from whatever cause.
5. Appears to check the tendency to suppuration in acute inflammations of various organs and tissues.
6. Large doses of Quinia are very valuable in certain septic conditions of blood, as surgical and puerperal septicaemia.
7. Externally applied as an antiseptic and stimulant to unhealthy ulcers; may be used as a gargle in putrid sore throat, or as a dentifrice to spongy gums.

Large doses of Quinia produce symptoms of *Quinism*, viz., buzzing in the ears, giddiness, deafness, wakefulness, and occasionally nausea with anorexia.

Adulterations.—The officinal barks may be substituted by inferior non-officinal cinchonas, or by barks of other kinds.

The Adulterations of Quinia are the following :

- * (a.) *Sulphates of Lime, Chalk and Magnesia*; these are insoluble in alcohol, and when heated on platinum foil leave an ash, the nature of which is ascertained by the ordinary tests.
- (b.) *Cinchonia, Cinchonidia and Quinidia*; detected by their different solubilities in water, alcohol and ether.
- (c.) *Salicine*; gives a *blood-red* colour with sulphuric acid.
- (d.) *Sugars*; a solution of the salt, after the precipitation of the alkaloid by an alkali, is sweet.
- (e.) *Starch*; gives a *blue* colour with iodine.
- (f.) *Stearic Acid*; insoluble in dilute acids.
- (g.) *Boracic Acid*; an alcoholic solution, burns with a *green* flame.

3.—CEPHAËLIS IPECACUANHA.

Ipecacuanha.—*IPECACUANHA*.—The dried ROOT of Cephaëlis Ipecacuanha. Imported from Brazil.

Characters.—In pieces three or four inches long, about the size of a small quill, contorted and irregularly annulated. Colour brown of various shades. It consists of two parts, the cortical or active portion, which is brittle, and a slender, tough white woody centre. Powder, pale-brown, with a faint nauseous odour and a somewhat acrid and bitter taste.

Contains a feeble alkaloid, *Emetina*, united with *Cephaëlic*

* Handsell Griffiths.

or *Ipecacuanhic Acid*; also starch, sugar, gum, pectin, albumen, and fatty or oily matters.

Dose, as an *expectorant*, $\frac{1}{2}$ grain to 2 grains.

" as an *emetic*, 15 " to 30 grains.

Officinal Preparations.—**PILULA IPECACUANHÆ CUM SCILLA.**

— Pill of Ipecacuanha with Squill (compound powder of ipecacuanha, 3 oz.; squill, in powder, 1 oz.; ammoniacum, in powder, 1 oz.; treacle, a sufficiency). Contains 1 part of opium in 23, nearly.

Dose, 5 to 10 grains.

PULVIS IPECACUANHÆ COMPOSITUS.—Compound Powder of Ipecacuanha (ipecacuanha, in powder, $\frac{1}{2}$ oz.; opium, in powder, $\frac{1}{2}$ oz.; sulphate of potash, in powder, 4 oz.).

Dose, 5 to 15 grains.

TROCHISCI IPECACUANHÆ.—Ipecacuanha Lozenges (ipecacuanha, in powder, 180 gr.; refined sugar, in powder, 25 oz.; gum acacia, in powder, 1 oz.; mucilage of gum acacia, 2 fl. oz.; distilled water, 1 fl. oz., or a sufficiency). Each lozenge contains $\frac{1}{2}$ grain of ipecacuanha. *Dose*, 1 to 3 lozenges.

VINUM IPECACUANHÆ.—Wine of Ipecacuanha (ipecacuanha, bruised, 1 oz.; sherry, 1 oct.).

Dose, as an *expectorant*, 5 to 40 minims.

" as an *emetic*, 3 to 6 fluid drachms.

Ipecacuanha is also contained in Pilula Conii Composita, and Trochisci Morphiae et Ipecacuanhae.

Therapeutics.—When topically applied, ipecacuanha and emetina exert an irritant effect upon mucous membranes and raw surfaces. When injected hypodermically, emetina has caused vomiting in the lower animals. It lowers the pulse, and relaxes the muscular spasm induced by strychnia. In medicinal doses Ipecacuanha is an emetic, but not so speedy as mustard or sulphate of zinc. In small doses it becomes absorbed and acts upon the different mucous membranes, especially those of the alimentary canal and respiratory passages; it is therefore expectorant, and sometimes laxative. It is also diaphoretic. It is very useful as an emetic in chest and throat affections attended by fever, as in bronchitis, phthisis and diphtheria, in which the *after-expectorant* effect is very serviceable: and it may be given to unload the stomach in certain forms of dyspepsia. It may be used as an *expectorant* in all forms of bronchial diseases; and, in consequence of its action upon the alimentary canal, it is of great value in diarrhoea and chronic dysentery. It is regarded almost as a specific in acute dysentery of the tropics; large doses are given at intervals of 8—10 hours. Ipecacuanha is frequently given in

catarrhal affections as a *diaphoretic* in the form of Dover's powder. The combination with opium seems to increase its sudorific action.

In some persons who are peculiarly susceptible, the effluvia from the powdered drug will cause coughing, sneezing, and a species of asthma.

Adulterations.—Peruvian or *Striated* ipecacuanha, the produce of *Psychotria Emetica*, and other roots. It is also sometimes largely adulterated with almond meal.

Compositæ.

1.—ANTHEMIS NOBILIS. THE COMMON CHAMOMILE.

Anthemidis Flores.—CHAMOMILE FLOWERS.—The dried single and double FLOWER-HEADS of *Anthemis Nobilis*. Wild and cultivated.

Characters.—The single variety consists of both yellow tubular, and white strap-shaped florets; the double, of white strap-shaped florets only; all arising from a conical scaly receptacle; both varieties, but especially the single, are bitter and very aromatic. Contain a volatile oil, said to be a mixture of *Butylic* and *Amylic Angelate* and *Valerate*. When heated with caustic potash, *Potassium Angelate* is formed, which upon the addition of sulphuric acid yields *Angelic Acid*. Also contain a bitter extractive principle.

Officinal Preparations.—EXTRACTUM ANTHEMIDIS.—Extract of Chamomile (chamomile flowers, 1 lb.; oil of chamomile, 15 min.; distilled water, 1 cong.). Dose, 2 to 10 grains.

INFUSUM ANTHEMIDIS.—Infusion of Chamomile (chamomile flowers, $\frac{1}{2}$ oz.; boiling distilled water, 10 fl. oz.).

Dose, 1 to 4 fluid ounces.

Anthemidis Oleum.—OIL OF CHAMOMILE.—The oil distilled in Britain from Chamomile Flowers.

Characters.—Pale-blue or greenish-blue, but gradually becoming yellow; with the peculiar odour and aromatic taste of the flowers. Contained in Extractum Anthemidis.

Therapeutics.—An aromatic stomachic and tonic; in large doses, emetic; given in dyspepsia, and to assist the action of emetics. The oil is carminative and stimulant, and is a useful adjunct to purgatives.

2.—ARNICA MONTANA.

Arnicas Radix.—ARNICA Root.—The dried RHIZOME and Rootlets of *Arnica Montana*. Collected in the mountainous parts of Middle and Southern Europe.

Characters.—Rhizome from one to three inches long, and two or three lines thick, cylindrical, contorted, rough from the scars of the coriaceous leaves, and furnished with numerous long slender fibres; has a peppery taste and peculiar odour. Contains *Arnycin*, a bitter resinous principle; a yellowish volatile oil ($C_9H_{16}O$) and Trimethylamine have also been obtained from it.

Officinal Preparation.—**TINCTURA ARNICÆ.**—Tincture of Arnica (arnica root, in coarse powder, 1 oz.; rectified spirit, 1 oct.). *Dose*, 1 to 2 fluid drachms.

Therapeutics.—Internally administered, arnica is an irritant and stimulant. It is supposed to act upon the spinal cord, and is said to be useful in nervous headache and chronic rheumatic pains. It is chiefly used as an external application for bruises and sprains, and for the discussion of tumours, but its virtues are very questionable. The tincture is used either alone or diluted with water; and it is sometimes added to linimenta.

3.—LACTUCA VIROSA. THE WILD LETTUCE.

Lactuca.—**LETTUCE.**—The flowering HERB of *Lactuca Virosa*. The concrete juice of this plant is termed

Lactucarium, and is obtained by pressing out the juice from the flowering herb, and afterwards inspissating it with a gentle heat. It possesses a bitter taste and an opium-like odour, and is known as *Thridace*, or *Lettuce-Opium*. It yields to alcohol a bitter extractive, and a crystalline substance, *Lactucone*; also *Lactucin* and *Lactucic Acid*.

Officinal Preparation.—**EXTRACTUM LACTUCÆ.**—Extract of Lettuce (the flowering herb of lettuce, 112 lb.).

Dose, 5 to 15 grains.

Therapeutics.—Some narcotic powers have been ascribed to the lettuce, which is occasionally eaten at bed-time to procure sleep. The extract and lactucarium have been given to obtain sleep and allay cough in cases in which opium is not well borne. The powers of lettuce are certainly very feeble as compared with those of opium, and 30 grains and more of good lactucarium have been given, and the dose repeated every four hours, without any decided narcotic effect having been noticed.

4.—ANACYCLUS PYRETHRUM. THE PELLITORY.

Pyrethri Radix.—**PELLITORY Root.**—The root of *Anacyclus Pyrethrum*. Imported from the Levant.

Characters.—In pieces about the length and thickness of the little finger, covered with a thick brown bark, studded with black shining points. Breaks with a resinous fracture, and presents internally a radiated structure. When chewed, it excites a prickling sensation on the lips and tongue, and a glowing heat. Contains two resins, one, *Pyrethric Acid* or *Pyrethrin*, insoluble in liquor potassæ, the other soluble, together with a yellow acrid oil, gum, tannin, colouring matter, and salts.

Officinal Preparation.—TINCTURA PYRETHRI.—Tincture of PELLITORY (pellitory root, in coarse powder, 4 oz. : rectified spirit, 1 oct.).

Therapeutics.—A topical irritant, causing a pricking sensation in the mouth, and a flow of buccal mucus and saliva. Used in relaxed throat and aphonia, and as a local stimulant in odontalgia or neuralgia of the teeth, and as a masticatory in paralysis of parts about the mouth.

Pyrethrum is not given internally, but the tincture, diluted with water, is used as a gargle.

5.—ARTEMISIA SANTONICA. THE WORM SEED.

Santonica.—SANTONICA.—The unexpanded FLOWER-HEADS of Artemisia Santonica. Imported from Russia.

Characters.—Flower-heads rather more than a line in length, and nearly half a line in breadth, fusiform, blunt at each end, pale greenish-brown, smooth; resembling seeds in appearance, but consisting of imbricated involucral scales with a green midrib, enclosing four or five tubular flowers; odour strong, taste bitter, camphoraceous. Flower-heads not round or hairy. Contain a volatile oil consisting chiefly of *Cinebene Camphor*. Dose, 10 to 60 grains.

The most important constituent of Santonica, and which it contains in the proportion of $1\frac{1}{2}$ to 2 per cent., is

Santoninum.—SANTONIN, $C_{15}H_{18}O_3$.—A crystalline, neutral principle, prepared from Santonica (santonica, bruised, 1 lb.; slaked lime, 7 oz.; hydrochloric acid, a sufficiency; solution of ammonia, $\frac{1}{2}$ fl. oz.; rectified spirit, 14 fl. oz.; purified animal charcoal, 60 gr.; distilled water, a sufficiency).

The Santonica is bruised with lime and water to form *Santonate of Lime*. Hydrochloric Acid is added to this, *Chloride of Calcium* being formed and *Santoninum* precipitated. The precipitate is washed with water, and ammonia added to free it from acid; *Animal Charcoal* is added to decolorise, and the *Santonin* dissolved out by boiling spirit. Is then set aside to

crystallise in the dark, and kept in bottles protected from the light, in order to prevent the crystals becoming yellow.

Characters.—Colourless, flat rhombic prisms, feebly bitter, fusible and sublimable by a moderate heat; scarcely soluble in cold water, sparingly in boiling water, but abundantly so in chloroform and rectified spirit. Sunlight renders it yellow; soluble in caustic fixed alkalies, by which it is converted into *Santonic Acid*, but not in diluted mineral acids. Santonin, by prolonged boiling in diluted nitric acid, is converted into *Succinic Acid*. *Dose*, 2 to 6 grains.

Therapeutics. — Internally administered, yellow vision (*Xanthopsys*) is occasioned. This is due to some specific influence either upon the visual centre of the brain or upon the retina. The sensibility of the retina for violet rays is apparently first stimulated and then blunted.

A dose of 3 grains will stain the urine *yellow*. In large doses, giddiness, vomiting, headache, convulsions, and even death have been occasioned.

Santonin is employed as an anthelmintic especially suitable for children. It is useless against the thread-worm (*oxyuris vermicularis*), and the tape-worm (*tænia solium*), but destroys the round worm (*ascaris lumbricoides*). Its administration should be followed by some mild purgative.

Adulterations of Santonin.—Gum, detected by its solubility in water; and boracic acid, an alcoholic solution of which burns with a green flame.

6.—TARAXACUM DENS LEONIS. THE DANDELION.

Taraxaci Radix.—**DANDELION ROOT.**—The fresh and dried ROOTS of Taraxacum Dens Leonis. Gathered between September and February, from meadows and pastures in Britain.

Characters and Tests.—Tap-shaped roots, smooth and dark-brown externally, white within, easily broken, and giving out an inodorous bitter milky juice, which becomes pale-brown by exposure. Not wrinkled or pale-coloured externally; juice not watery; any adherent leaves runcinate and quite smooth.

Officinal Preparations.—**DECOCTUM TARAXACI.**—Decoction of Dandelion (dried dandelion root, sliced and bruised, 1 oz.; distilled water, 1 oct.). *Dose*, 2 to 4 fluid ounces.

EXTRACTUM TARAXACI.—Extract of Dandelion (fresh dandelion root, 4 lb.). *Dose*, 5 to 30 grains.

SUCCUS TARAXACI.—Juice of Dandelion (fresh dandelion root, 7 lb.; rectified spirit, a sufficiency). Contains resinous

matter, sugar, gum, and a bitter extractive, from which has been obtained *Taraxazine*, a crystalline principle.

Dose, 1 to 2 fluid drachms.

Therapeutics.—Said to act specifically upon the liver, increasing and modifying its secretion. It is usually combined with a purgative in the treatment of dropsies resulting from hepatic obstruction; but its value as a remedy admits of much doubt. It produces a marked diuretic action in some persons.

Convulvulaceæ.

1.—EXOGONIUM PURGA.

Jalapa.—*JALAP*.—The dried TUBERCLES of *Exogonium Purga*. Imported from Mexico.

Characters.—Varying from the size of a nut to that of an orange, ovoid, the larger tubercles frequently in cised, covered with a thin brown wrinkled cuticle; presenting, when cut, a yellowish-grey colour, with dark-brown concentric circles.

Dose, 10 to 30 grains.

Officinal Preparations.—*EXTRACTUM JALAPÆ*.—Extract of Jalap (jalap, in coarse powder, 1 lb.; rectified spirit, 4 oct.; distilled water, 1 conq.). *Dose*, 5 to 15 grains.

PULVIS JALAPÆ COMPOSITUS.—Compound Powder of Jalap (jalap, in powder, 5 oz.; acid tartrate of potash, 9 oz.; ginger, in powder, 1 oz.). *Dose*, 20 to 60 grains.

TINCTURA JALAPÆ.—Tincture of Jalap (jalap, in coarse powder, 2½ oz.; proof spirit, 1 oct.).

Dose, ½ to 2 fluid drachms.

Jalap, in powder, is also contained in *Pulvis Scammonii Compositus*.

Jalapæ Resina.—*RESIN OF JALAP*.—Jalap, in coarse powder, 8 oz.; rectified spirit and distilled water, a sufficiency.

Characters and Tests.—In dark-brown opaque fragments, translucent at the edges, brittle, breaking with a resinous fracture, readily reduced to a pale-brown powder, sweetish in odour, acrid in the throat, easily soluble in rectified spirit, but only partially so in ether. Is known in commerce as *Jalapin*, and consists of *Convolvulin* or *Rhodeoretin*, the active constituent, and *Jalapic Acid*. *Convolvulin* is converted by alkalies into *Convolvulic Acid*, and by nitric acid into oxalic acid and *Ipomaeic Acid*. *Jalap Resin* is not readily miscible with milk. *Dose*, 2 to 5 grains.

Jalap Resin is contained in *Filula Scammonii Composita*.

Therapeutics.—A brisk purgative, inducing watery dis-

charge ; much allied to scammony, but less irritant ; apparently acts more upon the small than the large intestines. Is used as an ordinary purgative in costiveness, and given in dropsies as a hydragogue, especially when combined with calomel or acid tartrate of potash. It has little taste, and is therefore a convenient purgative for children, and is often employed as a vermifuge.

Adulterations.—Other roots, as that of *Ipomoea Orizabensis*, etc.

2.—CONVOLVULUS SCAMMONIA.

Scammoniae Radix.—**SCAMMONY Root.**—The dried root of *Convolvulus Scammonia*. From Syria and Asia Minor.

Characters.—Tap-shaped roots, sometimes three inches in diameter at the top, brown without, white within, slightly odorous, but tasteless. Ether agitated with the powder and evaporated leaves a residue having the properties of scammonia resin. *Dose, in powder*, 5 to 10 grains.

Scammoniae Resina.—**RESIN OF SCAMMONY.**—(*Scammony root, in coarse powder, 8 oz. ; rectified spirit and distilled water, a sufficiency.*) *Dose, 3 to 8 grains.*

Characters.—In brownish translucent pieces, brittle, resinous in fracture, of a sweet fragrant odour if prepared from the root. It cannot form singly an emulsion with water, thus distinguishing it from the gum resin (*scammonium*). Its tincture does not render the fresh-cut surface of a potatoe blue, showing the absence of *guaiacum* resin.

Officinal Preparations.—**MISTURA SCAMMONII.**—*Scammony Mixture (resin of scammony, 4 gr. ; milk, 2 fl. oz.).*

Dose, $\frac{1}{2}$ to 2 fluid ounces (for a child).

PILULA SCAMMONII COMPOSITA.—Compound Scammony Pill (resin of scammony, 1 oz. ; resin of jalap, 1 oz. ; curd soap, in powder, 1 oz. ; strong tincture of ginger, 1 fl. oz. ; rectified spirit, 2 fl. oz.). *Dose, 5 to 15 grains.*

Scammony resin is also contained in *Extractum Colocynthidis Compositum*.

The chief constituent of this resin is a glucoside identical with *Jalapin*, allied to *Convolvulin*, and termed

Scammonium.—**SCAMMONY.**—A GUM RESIN, obtained by incision from the living root of *Convolvulus Scammonia*, chiefly in Asia Minor.

Characters and Tests.—Ash-grey and rough externally ; fresh fracture resinous, splintery, shining, black when dry ; odour and flavour cheesy ; causes, when chewed, a slight prickly sensation in the back of the throat ; easily triturated

into a dirty-grey powder, and converted by water into a smooth emulsion. Contains no starch. *Dose*, 5 to 10 grains.

Officinal Preparations.—**CONFECTIO SCAMMONII**.—Confection of Scammony (scammony, in fine powder, 3 oz.; ginger, in fine powder, 1½ oz.; oil of caraway, 1 fl. dr.; oil of cloves, ½ fl. dr.; syrup, 3 fl. oz.; clarified honey, 1½ oz.).

Dose, 10 to 30 grains.

PULVIS SCAMMONII COMPOSITUS.—Compound Powder of Scammony (scammony, in powder, 4 oz.; jalap, in powder, 3 oz.; ginger, in powder, 1 oz.). *Dose*, 10 to 20 grains.

Scammonium is also contained in Pilula Colocynthidis Composita and Pilula Colocynthidis et Hyoscyami.

Therapeutics.—A drastic purgative, usually causing much watery discharge, and frequently griping; used in constipation, cerebral and dropsical effusions, and as a vermifuge for children.

Adulterations.—Mostly adulterated with chalk, flour, other resins, and extracts; sometimes the drug contains only a small percentage of real scammony.

Ericaceæ.

ARCTOSTAPHYLOS UVA URSL THE BEAR-BERRY.

Uvae Ursi Folia.—**BEARBERRY LEAVES**.—The dried LEAVES of *Arctostaphylos Uva Ursi*. From indigenous plants.

Characters.—Obovate entire coriaceous shining leaves, about three-fourths of an inch in length, reticulated beneath, with a strong astringent taste, and a feeble hay-like odour when powdered; leaves not dotted beneath, nor toothed on the margin. Contain Gallic and Tannic Acids, and two crystallisable principles, *Ursone* ($C_{20}A_{32}O_2$) and *Arbutin* ($C_{12}H_{18}O_7$), with bitter extractive, etc.

Dose, in powder, 10 to 30 grains.

Officinal Preparation.—**INFUSUM UVÆ URSL**.—Infusion of Bearberry (bearberry leaves, bruised, ½ oz.; boiling distilled water, 10 fl. oz.). *Dose*, 1 to 2 fluid ounces.

Therapeutics.—A diuretic and astringent, used in urethral and vesical affections, as catarrhus vesicæ chronicus, to diminish mucous discharges and irritability; also in gleets. May be administered with acids or alkalies.

Adulterations.—The leaves of *Vaccinium Vitis Idaea* or Red Whortleberry. These are known by their being dotted, not reticulated, on the under surface, and by their crenated margins; also the common Box leaves; these latter are devoid of astringency.

Gentianaceæ.

1.—OPHELIA CHIRATA. CHIRETTA

Chirata.—**CHIRETTA.**—The entire plant, Ophelia Chirata. Collected in Northern India.

Characters.—Stems about three feet long, of the thickness of a goose-quill, round, smooth, pale-brown, branched; branches opposite; flowers small, numerous, panicled; the whole plant intensely bitter.

Contains a bitter resinous substance, *Chiratin*, and *Ophelic Acid*.

Officinal Preparations.—**INFUSUM CHIRATÆ.**—Infusion of Chiretta (chiretta, cut small, $\frac{1}{2}$ oz.; distilled water, at 120° Fah., 10 oz.). *Dose*, 1 to 2 fluid ounces.

TINCTURA CHIRATÆ.—Tincture of Chiretta (chiretta, cut small and bruised, $2\frac{1}{2}$ oz.; proof spirit, 1 oct.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

Therapeutics.—A pure bitter tonic; given in atonic dyspepsia.

2.—GENTIANA LUTEA. THE YELLOW GENTIAN.

Gentianæ Radix.—**GENTIAN Root.**—The dried root of Gentiana Lutea. Collected in the mountainous districts of Central and Southern Europe.

Characters.—From half an inch to one inch in thickness, several inches in length, often twisted, much wrinkled, or marked with close transverse rings; brown externally, yellow within, tough and spongy; taste at first sweetish, afterwards very bitter.

Contains *Gentianic Acid*, and a crystalline bitter principle, *Gentio-Picrin*. No starch or tannic acid, and therefore compatible with salts of iron. *Dose, in powder*, 10 to 30 grains.

Officinal Preparations.—**EXTRACTUM GENTIANÆ.**—Extract of Gentian (gentian root, sliced, 1 lb.; boiling distilled water, 1 cong.). *Dose*, 2 to 10 grains.

INFUSUM GENTIANÆ COMPOSITUM.—Compound Infusion of Gentian (gentian root, sliced, 60 gr.; bitter orange peel, cut small, 60 gr.; fresh lemon peel, cut small, $\frac{1}{2}$ oz.; boiling distilled water, 10 fl. oz.).

Dose, 1 to 2 fluid ounces.

MISTURA GENTIANÆ.—Gentian Mixture (gentian root, sliced, $\frac{1}{2}$ oz.; bitter orange peel, cut small, 30 gr.; coriander fruit, bruised, 30 gr.; proof spirit, 2 fl. oz.; distilled water, 8 fl. oz.). *Dose*, $\frac{1}{2}$ to 1 fluid ounce.

TINCTURA GENTIANÆ COMPOSITA.—Compound Tincture of

Gentian (gentian root, cut small and bruised, $1\frac{1}{2}$ oz. ; bitter orange peel, cut small and bruised, $\frac{3}{4}$ oz. ; cardamom seeds, freed from the pericarps and bruised, $\frac{1}{4}$ oz. ; proof spirit, 1 oct.). *Dose*, $\frac{1}{2}$ to 2 fluid drachms.

Therapeutics.—A simple, bitter stomachic tonic, exceedingly useful in convalescence from acute disease, in atonic dyspepsia and in debility generally. It improves the appetite, and gives tone to the stomach.

Labiatae.

1.—LAVANDULA VERA. THE TRUE LAVENDER.

Lavandulae Oleum.—OIL OF LAVENDER.—The oil distilled in Britain from the flowers of *Lavandula Vera*.

Characters.—Colourless or pale yellow, with the odour of lavender, and a hot bitter aromatic taste.

Dose, 1 to 6 minimis.

Contains a hydrocarbon ($C_{10}H_{16}$) and yields camphor by oxidation.

Officinal Preparations.—SPIRITUS LAVANDULÆ.—Spirit of Lavender (oil of lavender, 1 fl. oz. ; rectified spirit, 49 fl. oz.).

Dose, $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA LAVANDULÆ COMPOSITA.—Compound Tincture of Lavender (oil of lavender, $1\frac{1}{2}$ fl. dr. ; oil of rosemary, 10 min. ; cinnamon bark, bruised, 150 gr. ; nutmeg, bruised, 150 gr. ; red sandalwood, 300 gr. ; rectified spirit, 2 oct.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

Oil of Lavender is also contained in Linimentum Camphoræ Compositum.

Therapeutics.—Stimulant and carminative, given in colic and flatulence ; also in hypochondriasis, hysteria, and other nervous affections.

Adulterations.—The oil of spike (*lavandula spica*) is sometimes mixed with or substituted for the true oil ; oil of turpentine is also mixed with it.

2.—MENTHA PIPERITA. PEPPERMINT.

Menthæ Piperitæ Oleum.—OIL OF PEPPERMINT.—The oil distilled in Britain from fresh flowering *Mentha Piperita*.

Characters.—Colourless or pale-yellow, with the odour of peppermint ; taste warm, aromatic, succeeded by a sensation of coldness in the mouth.

Consists of a hydrocarbon, *Menthene* ($C_{10}H_{18}$), and *Menthol* or *Peppermint-Camphor* ($C_{10}H_{20}O$). *Dose*, 1 to 5 minimis.

Officinal Preparations.—**AQUA MENTHAE PIPERITÆ.**—Peppermint Water (oil of peppermint, $1\frac{1}{2}$ fl. dr.; water, $1\frac{1}{2}$ conq. Distil one gallon). *Dose*, 1 to 2 fluid ounces.

Contained in *Mistura Ferri Aromatica*.

ESSENTIA MENTHAE PIPERITÆ.—Essence of Peppermint (oil of peppermint, 1 fl. oz.; rectified spirit, 4 fl. oz.).

Dose, 10 to 20 minimæ.

SPIRITUS MENTHAE PIPERITÆ.—Spirit of Peppermint (oil of peppermint, 1 fl. oz.; rectified spirit, 49 fl. oz.).

Dose, $\frac{1}{2}$ to 1 fluid drachm.

Oil of peppermint is also contained in *Pilula Rhei Composita*.

Therapeutics.—Carminative and stimulant; given as an adjunct to purgatives, to relieve flatulence.

3.—MENTHA VIRIDIS. SPEARMINT.

Menthae Viridis Oleum.—**OIL OF SPEARMINT.**—The oil distilled in Britain from fresh flowering spearmint, *Mentha Viridis*.

Characters.—Colourless or pale-yellow, with the odour and taste of spearmint. Consists of a hydrocarbon, identical with oil of turpentine, mixed with an oxidised oil, or stearoptene, isomeric with *Carvol* ($C_{10}H_{14}O$). *Dose*, 1 to 5 minimæ.

Officinal Preparation.—**AQUA MENTHAE VIRIDIS.**—Spearmint Water (Oil of spearmint, $\frac{1}{2}$ fl. dr.; water, $1\frac{1}{2}$ conq. Distil one gallon). *Dose*, 1 to 2 fluid ounces.

Therapeutics.—The same as Peppermint.

4.—ROSMARINUS OFFICINALIS. ROSEMARY.

Rosmarini Oleum.—**OIL OF ROSEMARY.**—The oil distilled from the flowering tops of *Rosmarinus Officinalis*.

Characters.—Colourless, with the odour of rosemary, and a warm aromatic taste.

The rosemary tops contain a volatile oil ($C_{10}H_{16}$), bitter extractive and tannin.

Officinal Preparation.—**SPIRITUS ROSMARINI.**—Spirit of Rosemary (oil of rosemary, 1 fl. oz.; rectified spirit, 49 fl. oz.).

Dose, 1 to 5 minimæ.

Oil of Rosemary is also contained in *Linimentum Saponis* and *Tinctura Lavandulae Composita*.

Therapeutics.—Powerfully stimulant; given in nervous headache and hysteria; externally used for its odour, and as a rubefacient.

Lobeliaceæ.

LOBELIA INFLATA. INDIAN TOBACCO.

Lobelia.—*LOBELIA*.—The dried FLOWERING HERB of *Lobelia Inflata*. Imported from North America.

Characters.—Stem angular; leaves alternate, ovate, toothed, somewhat hairy beneath; capsule ovoid, inflated, ten-ribbed; herb acrid. Usually in compressed rectangular parcels, somewhat like chopped hay. Has a peculiar odour, and a burning taste, which is not apparent until some time after it has been chewed. Contains a volatile oil, *Lobelic Acid*, and *Lobelina*, an alkaline active principle, which is a yellowish liquid with a tobacco-like odour.

Officinal Preparations.—*TINCTURA LOBELLÆ*.—Tincture of *Lobelia* (*lobelia*, in coarse powder, $2\frac{1}{2}$ oz.; proof spirit, 1 oct.).

Dose, 10 minima to $\frac{1}{2}$ fluid drachm.

TINCTURA LOBELLÆ ÆTHEREA.—Ethereal Tincture of *Lobelia* (*lobelia*, in coarse powder, $2\frac{1}{2}$ oz.; spirit of ether, 1 oct.). *Dose*, 10 minima to $\frac{1}{2}$ fluid drachm.

Therapeutics.—Expectorant and diaphoretic in small doses; emetic or cathartic in larger doses. In too great quantity it produces much depression, nausea, cold sweats, and even death, preceded by convulsions; very similar to tobacco in its action. Has enjoyed much favour in the treatment of spasmodic asthma, and other affections of the air passages attended by dyspnoea. Sometimes useful as an adjunct to diuretics.

Loganiaceæ.

STRYCHNOS NUX VOMICA.

Nux Vomica.—*NUX VOMICA*.—The SEEDS of *Strychnos Nux Vomica*. Imported from the East Indies.

Characters.—Nearly circular and flat, about an inch in diameter, umbilicated and slightly convex on one side, externally of an ash-grey colour, thickly covered with short satiny hairs, internally translucent, tough and horny, taste intensely bitter, inodorous. Contains three alkaloids, *Strychnia*, *Brucia*, and *Igasuria*, united with *Strychnic* or *Igasuric Acid*. *Dose*, in powder, 2 to 5 grains.

Officinal Preparations.—*EXTRACTUM NUCIS VOMICÆ*.—Extract of *Nux Vomica* (*nux vomica*, 1 lb.; rectified spirit, a sufficiency). *Dose*, $\frac{1}{2}$ grain to 2 grains.

TINCTURA NUCIS VOMICÆ.—Tincture of *Nux Vomica* (*nux vomica*, 2 oz.; rectified spirit, 1 oct.).

Dose, 10 to 20 minima.

Strychnia. — **STRYCHNIA, $C_{21}H_{25}N_2O_2$.** — An ALKALOID obtained from *Nux Vomica* (*nux vomica*, 1 lb. ; acetate of lead, 180 gr. ; solution of ammonia, rectified spirit and distilled water, of each a sufficiency).

By digestion with water and rectified spirit, the seeds are exhausted of the *Igasurates* of *Strychnia* and *Brucia*; Acetate of lead is added, with the formation of *Acetates* of *Strychnia* and *Brucia*, and the precipitation of *Igasurate* of *Lead*. Ammonia is now added to precipitate the alkaloids, *Acetate of Ammonia* being left in the solution. The precipitated alkaloids are dissolved in spirit, and the spirituous solution evaporated, the yellowish mother liquor, containing the brucia of the seeds, being cautiously poured off from the white crust of strychnia which adheres to the vessel. The strychnia is washed until the washings no longer give a red colour with nitric acid, indicating the absence of brucia, and it is finally dissolved in boiling water, and crystallised.

Tests. — (1) Strychnia is intensely bitter, and (2) gives, with sulphuric acid, a colourless solution which, when bichromate of potash is added, yields an *iridescent play* of colours, passing from yellow to violet.

Officinal Preparation. — **LIQUOR STRYCHNÆ.** — Solution of Strychnia (strychnia, in crystals, 4 gr. ; diluted hydrochloric acid, 6 min. ; rectified spirit, 2 fl. dr. ; distilled water, 6 fl. dr.) ; 4 grains of strychnia in 1 ounce of the liquor.

Dose, 5 to 10 minima.

BRUCIA is more soluble in water than strychnia. It gives a *deep red colour* with nitric acid, turning to violet on the addition of stannous chloride.

IGASURIC OR STRYCHNIC ACID in solution precipitates copper salts *bright-green*.

Therapeutics. — Strychnia acts especially upon the motor tract of the spinal cord, increasing the reflex excitability of that cord, and if the drug has been taken in poisonous doses, the slightest stimulus excites tetanic spasms. It is said to cause a rise of blood pressure and a contraction of the peripheral arterioles ; it does not directly influence the cerebral centres, the voluntary muscles, or the heart.

In man this drug produces rigidity and twitching of the muscles, succeeded by tetanic spasms, consciousness being retained. The muscles are relaxed during the intervals of the paroxysms. A fatal issue may result from exhaustion between the spasms, or from apnoea during a spasm, due to protracted rigidity of the respiratory muscles. The alkaloid affects paralysed parts more readily than the sound ; it is eliminated by the urine.

From Dr. Garrod's experience, Brucia, when *pure*, produces none of the effects of strychnia, even in large doses; it may, perhaps, be antiperiodic and tonic. Chloroform, chloral, and physostigma, and keeping up artificial respiration, have been employed to counteract the fatal effects of strychnia.

Medicinally the action of strychnia is that of a bitter stomachic, and it is given in some forms of dyspepsia, as pyrosis. When combined with purgatives, it increases their efficacy.

Nux Vomica is much employed in the treatment of paralysis, especially when dependent upon lead poisoning, and is sometimes given in paraplegia and hemiplegia. It is also useful in giving tone to the muscular system in cases of debility, and may be administered in hysteria and depression of spirits. Its aphrodisiac properties are often well marked, and it is given in impotence from nervous exhaustion. Finally, it may be given in chorea and chronic spasmodic affections.

Some persons are exceedingly sensitive to the action of strychnia and nux vomica; 10 minims of tincture of nux vomica, and $\frac{1}{4}$ gr. of strychnia, have caused serious symptoms.

Hypodermically administered, 1 to 5 minims of the liquor strychniae may be used.

Adulteration of Strychnia.—Brucia in variable quantity, detected by its red colour with nitric acid.

Oleaceæ.

1.—GLYCERINUM.

Glycerinum. — GLYCERINE, $C_3H_8O_3$. — A sweet principle obtained from fats and fixed oils, and containing a small percentage of water.

Characters.—A clear, colourless fluid, oily to the touch, without odour, of a sweet taste; freely soluble in water and in alcohol. When decomposed by heat it evolves intensely irritating vapours of *Acrolein*. Specific gravity 1.25. Takes fire at a red heat, and burns with a blue flame. Possesses a remarkable power of dissolving arsenious anhydride, carbolic acid, borax, and many alkaloids. It decomposes permanganate and bichromate of potash. Heated with starch, it forms a "plasma." When glycerine is acted upon by strong acids, an oily, poisonous, explosive liquid is produced, termed *Nitro-Glycerine*. *Dose*, 1 to 2 drachms.

Officinal Preparations.—THE GLYCERINA.

1. GLYCERINUM ACIDI CARBOLICI.—Glycerine of Carbolic Acid (carbolic acid, 1 oz.; glycerine, 4 fl. oz.).

2. GLYCERINUM ACIDI GALLICI.—Glycerine of Gallic Acid (gallic acid, 1 oz.; glycerine, 4 fl. oz.).

3. GLYCERINUM ACIDI TANNICI.—Glycerine of Tannic Acid (tannic acid, 1 oz. ; glycerine, 4 fl. oz.).

4. GLYCERINUM AMYLI.—Glycerine of Starch (starch, 1 oz. ; glycerine, 8 fl. oz.).

5. GLYCERINUM BORACIS.—Glycerine of Borax (borax, in powder, 1 oz. ; glycerine, 4 fl. oz.). Glycerine is also used in Linimentum Potassii Iodidi cum Sapone.

Therapeutics.—Used as an adjunct to lotions in skin diseases. Has been proposed as a substitute for sugar in the treatment of diabetes mellitus ; and has been employed as a substitute for cod-liver oil, but without much benefit.

2. FRAXINUS ORNUS.

Manna.—**MANNA.**—A CONCRETE SACCHARINE EXUDATION from the stem of *Fraxinus Ornus*. Obtained by making incisions in the stems of the trees, which are cultivated for the purpose, chiefly in Calabria and Sicily.

Characters.—In stalactitiform pieces from one to six inches in length, and one to two inches in width, uneven, porous, and friable, curved on one side, of a yellowish-white colour, with a faintly nauseous odour and a sweetish taste. It consists principally of mannite, $C_6H_{10}O_5$, together with sugar and extractive matter. The glaucous colour of manna is due to *Fraxin*. *Dose*, 60 grains to 1 ounce.

Therapeutics.—A very mild laxative, suitable for children ; it is occasionally given as an agreeable adjunct to some purgative draughts.

3. OLEA EUROPÆA.

Olives Oleum.—The oil expressed in the south of Europe from the ripe fruit of *Olea Europæa*.

Characters.—Pale yellow, with scarcely any odour, and a bland oleaginous taste ; congeals partially at about 36° Fah. Consists of about 72 per cent. of a fluid portion, *Olein*, or *Oleate of Glyceryl*, $C_3H_5(3C_{18}H_{32}O_2)_2$, and 28 per cent. of a solid portion, which is a mixture of *Palmitin*, $C_8H_{15}C_{16}H_{31}O_2$, and *Stearin*, $C_8H_5(3C_{18}H_{32}O_2)_2$.

Combines with alkalies to form soaps, and is converted by nitrate of mercury into *Elaidin*, a solid substance.

Olive oil is contained in *Charta Epispastica*, *Cataplasma Lini*, *Enema Magnesiae Sulphatis*, and some *Emplastra*, *Limenti*, and *Unguenta*.

Sapo Animalis.—**CURD SOAP.**—A soap made with soda, and a purified animal fat consisting principally of stearin ; white, or with a very light greyish tint, dry, and nearly in-

odorous ; used in the preparation of Pilula Scammonii Composita, and Suppositoria ; Acidi Carbolici cum Sapone ; Morphiae cum Sapone ; Acidi Tannici cum Sapone.

Curd soap may advantageously be substituted for the hard soap made with olive oil in preparing the Linimentum Potassii Iodidi cum Sapone.

Sapo Durus.—**HARD SOAP.**—Soap made with olive oil and Soda ; greyish-white, dry and inodorous ; used in Emplastrum Resinas and Saponis, Extractum Colocynthidis Compositum, Linimentum Potassii Iodidi cum Sapone, Linimentum Saponis, and in many Pilulae.

Sapo Mollis.—**SOFT SOAP.**—Soap made with olive oil and Potash ; yellowish-green, inodorous, of a gelatinous consistency. Contained in Linimentum Terebinthinae.

Therapeutics.—Soap acts as an antacid, but is liable to disagree with the stomach, since the fatty acids may become liberated. It has no particular value as an internal remedy, but is employed as an adjunct to other drugs, and for the formation of pills.

Sapotaceæ.

ISONANDRA GUTTA.

Gutta-Percha.—**GUTTA-PERCHA.**—The concrete juice of Isonandra Gutta.

Characters.—In tough flexible pieces, of a light-brown or chocolate colour. Soluble, or nearly so, in chloroform.

Commercial gutta-percha consists of three distinct portions, pure *Gutta*, a milk-white solid ($C_{20}H_{32}$), a crystalline resin ($C_{20}H_{32}O_2$), and an amorphous resin ($C_{20}H_{32}O$).

Official Preparation.—**LIQUOR GUTTA-PERCHA.**—Solution of Gutta-Percha (gutta-percha, in thin slices, 1 oz. ; chloroform, 8 fl. oz. ; carbonate of lead, in fine powder, 1 oz.).

Employed in *Charta Sinapis*.

Use.—Chiefly used for its physical properties for making splints.

Scrophulariaceæ.

DIGITALIS PURPUREA. THE PURPLE FOX-GLOVE.

Digitalis Folia.—**DIGITALIS LEAVES.**—The dried LEAVES of Digitalis Purpurea. Collected from wild indigenous plants, when about two-thirds of the flowers are expanded.

Characters.—Ovate-lanceolate, shortly petiolate, rugose, downy, paler on the under surface, crenate, almost colourless, taste bitter and acrid. *Dose, in powder, $\frac{1}{2}$ to $1\frac{1}{2}$ grain.*

Officinal Preparations.—**INFUSUM DIGITALIS.**—Infusion of Digitalis (digitalis leaves, dried, 30 gr.; boiling distilled water, 10 fl. oz.). *Dose*, 2 to 4 fluid drachms.

TINCTURA DIGITALIS.—Tincture of Digitalis (digitalis leaves, in coarse powder, 2½ oz.; proof spirit, 1 oct.).

Dose, 10 to 30 minims.

The digitalis leaves contain two active principles, *Digitalein* and

Digitalinum.—**DIGITALIN.**—A solution of this substance in hydrochloric acid is of a faint yellow colour, but rapidly becomes green. It is prepared from digitalis leaf, in coarse powder, 40 oz.; rectified spirit, distilled water, acetic acid, purified animal charcoal, solution of ammonia, tannic acid, oxide of lead, in fine powder, pure ether, of each a sufficiency.

Dose, $\frac{1}{4}$ to $\frac{1}{8}$ of a grain.

Therapeutics.—In small doses digitalis induces a rise of the blood pressure in the arteries, and a contraction of the systemic arterioles; the heart contracting more powerfully and slowly. By poisonous doses, the heart's action is rendered quick and irregular. Lastly, the heart stops beating, with its ventricles firmly contracted.

Medicinally administered, the most notable effect is slowing of the pulse. If the dose be increased, dangerous symptoms may arise, viz., vomiting, purging and faintness; patients under the full influence of digitalis should always assume the horizontal position, since when sitting or standing the above symptoms may arise.

Digitalis may not inaptly be termed *The Pendulum of the Heart*, since it diminishes increased action of that organ, and assists its driving power, when such power is deficient. It is most useful in cases of mitral disease; in hypertrophy with dilatation of the heart, irregular pulse and low arterial tension. It should be used with caution when the vascular system is atheromatous and the heart's tissue fatty.

Digitalis is used as a *diuretic* in dropsy, especially when associated with heart disease; but it should never be employed in the dropsy of chronic Bright's disease.

It is valuable in the treatment of haemorrhage, especially from the lungs, and has been used in delirium tremens for inducing sleep, and also in acute mania.

Digitalis is said to be *cumulative* in its action, i.e., during its use alarming symptoms may arise, and without any previous increase of dose.

Adulterations.—The leaves of *Verbascum Thapsus* and other plants.

Solanaceæ.

I. CAPSICUM FASTIGIATUM.

Capsici Fructus.—**CAPSICUM FRUIT.**—The dried ripe fruit of Capsicum Fastigiatum. Imported from Zanzibar, and distinguished in commerce as Guinea Pepper and Pod Pepper—chillies.

Characters.—Pod membranous, from five to eight lines long, two lines broad, straight, conical, pointed, smooth, shining, but somewhat corrugated, orange-red, intensely hot in taste.

Contains an acrid, volatile, crystalline alkaloid, *Capsicin*.

Dose, in powder, $\frac{1}{2}$ to 1 grain in pills.

Officinal Preparation.—**TINCTURA CAPSICI.**—Tincture of Capsicum (capsicum fruit, bruised, $\frac{4}{5}$ oz.; rectified spirit, 1 oct.). *Dose, 10 to 20 minims.*

Therapeutics.—A powerful topical stimulant, chiefly used as a condiment (cayenne pepper), but sometimes given in dyspepsia, diarrhoea, and excessive prostration; it is used as a gargle in scarlatinal and other forms of sore throat; externally it may be employed as a rubefacient.

2. SOLANUM DULCAMARA. THE BITTER-SWEET.

Dulcamara.—**DULCAMARA.**—The dried young branches of Solanum Dulcamara. From indigenous plants which have shed their leaves.

Characters.—Light, hollow, cylindrical, about the thickness of a goose-quill, bitter, and subsequently sweetish to the taste.

Contains, in very small amount, an alkaloid, *Solanin*, probably combined with malic acid; and a sweetish-bitter extract, *Dulcamarine* or *Picro-Glycion*.

Officinal Preparation.—**INFUSUM DULCAMARÆ.**—Infusion of Dulcamara (dulcamara, bruised, 1 oz.; boiling distilled water, 10 fl. oz.). *Dose, 1 to 2 fluid ounces.*

Therapeutics.—The efficacy of this drug is questionable. It is said to be alterative, and diaphoretic, and has been given in chronic skin diseases, as psoriasis, and also in syphilis.

Styraceæ.

STYRAX BENZOIN.

Benzoinum.—**BENZOIN.**—A balsamic RESIN obtained from *Styrax Benzoin*. It is procured by making incisions into the bark of the tree, and allowing the liquid that exudes to con-

crete by exposure to the air. Imported from Siam and Sumatra.

Characters.—In lumps, consisting of agglutinated tears, or of a brownish mottled mass with or without white tears imbedded in it; has little taste, but an agreeable odour; gives off, when heated, fumes of benzoic acid; is soluble in rectified spirit and in solution of potash.

Officinal Preparations.—*ACIDUM BENZOICUM.—Benzoic Acid. *Dose*, 10 to 15 grains.

TINCTURA BENZOINI COMPOSITA.—Compound Tincture of Benzoin (benzoin, in coarse powder, 2 oz.; prepared storax, 1½ oz.; balsam of tolu, ¼ oz.; socotrine aloes, 160 gr.; rectified spirit, 1 oct.). *Dose*, ½ to 1 fluid drachm.

Benzoin is also contained in Adeps Benzoatus; in Suppositoria: Acidi Tannici; Hydrargyri; Morphie; and Plumbi Composita; in Unguenta: Galse; Plumbi Acetatis; Sulphuris; and Zinci.

Therapeutics.—A stimulating expectorant, at one time employed in chronic bronchitic affections. Externally it is applied to ulcers and wounds in the form of the tincture (Friar's Balsam).

Valerianaceæ.

VALERIANA OFFICINALIS.

Valerianæ Radix.—VALERIAN Root.—The dried root of Valeriana Officinalis. From plants indigenous to and also cultivated in Britain; collected in autumn, wild plants being preferred.

Characters.—A short yellowish-white rhizome, with numerous fibrous roots about two or three inches long; of a bitter taste and penetrating odour, agreeable in the recent root, becoming fetid by keeping; yielding volatile oil and valerianic acid when distilled with water.

Dose, in powder, 10 to 20 grains.

Officinal Preparations.—INFUSUM VALERIANÆ.—Infusion of Valerian (valerian root, bruised, 120 gr.; boiling distilled water, 10 fl. oz.). *Dose*, 1 to 2 fluid ounces.

TINCTURA VALERIANÆ.—Tincture of Valerian (valerian root, in coarse powder, 2½ oz.; proof spirit, 1 oct.).

Dose, 1 to 2 fluid drachms.

TINCTURA VALERIANÆ AMMONIATA.—Ammoniated Tincture of Valerian (valerian root, in coarse powder, 2½ oz.; aromatic spirit of ammonia, 1 oct.).

Dose, ½ to 1 fluid drachm.

* See Part I.

Therapeutics.—A powerful stimulant and antispasmodic; useful in hysteria, chorea, epilepsy, and hypochondriasis, and as an adjunct to tonics. Its antispasmodic powers are very inferior to assafetida.

Valerianas Soda.—VALERIANATE OF SODA (amylic alcohol (fouzel oil) 4 fl. oz.; bichromate of potash, 9 oz.; sulphuric acid, 6½ fl. oz.; solution of soda, a sufficiency; water, ½ conq.). By the action of sulphuric acid upon the bichromate of potash *Chromic Acid* is formed, which substance, by its oxidising agency, converts the amylic alcohol into *Valerianic Acid*, and this combines with the Soda to form Valerianate of Soda.

Dose., 1 to 5 grains.

Therapeutics.—Appears to resemble valerian in its action. Introduced into the British Pharmacopœia for making the Valerianate of Zinc.

VALERIANAS ZINC.—Valerianate of Zinc (sulphate of zinc, 5½ oz.; valerianate of soda, 5 oz.; distilled water, a sufficiency). *Dose*, 1 to 3 grains.

Therapeutics.—A nervine tonic and antispasmodic; given in cases where the combined action of the metal and valerian is desirable, viz., in hysteria, chorea, epilepsy, and neuralgic affections.

SUB-CLASS IV.—APETALÆ.

Aristolochiae.

ARISTOLOCHIA SERPENTARIA.

Serpentaria Radix.—SERPENTARY Root.—The dried RHIZOME of Aristolochia Serpentaria. From the southern parts of North America.

Characters.—A small roundish rhizome, with a tuft of numerous slender rootlets, about three inches long, yellowish, of an agreeable camphoraceous odour, and a warm bitter camphoraceous taste. Contains a volatile oil, resin, tannin, sugar, and mucilage.

Officinal Preparations.—INFUSUM SERPENTARIE.—Infusion of Serpentary (serpentary root, bruised, ½ oz.; boiling distilled water, 10 fl. oz.). *Dose*, 1 to 2 fluid ounces.

TINCTURA SERPENTARIE.—Tincture of Serpentary (serpentary root, in coarse powder, 2½ oz.; proof spirit, 1 oct.).

Dose, ½ to 2 fluid drachms.

Serpentary root is also contained in Tinctura Cinchona Composita.

Therapeutics.—Stimulant, tonic, diaphoretic and diuretic; occasionally used in dyspepsia, low febrile conditions, and in chronic rheumatism. It may be exhibited when guaiacum is not well borne, since this latter is said occasionally to disturb the bowels.

Cannabinaceæ.

1. CANNABIS SATIVA.

Cannabis Indica.—INDIAN HEMP.—The dried flowering tops of the female plants of Cannabis Sativa. For medicinal use, that which is grown in India, and from which the resin has not been removed, is alone to be employed.

Characters.—Tops consisting of one or more alternate branches, bearing the remains of the flowers and smaller leaves, and a few ripe fruits, pressed together in masses which are about two inches long, harsh, of a dusky-green colour, and a characteristic odour.

Contains a resin (*Cannabin*), and a volatile oil.

Officinal Preparations.—EXTRACTUM CANNABIS INDICÆ.—Extract of Indian Hemp (Indian hemp, in coarse powder, 1 lb. ; rectified spirit, 4 oct.). *Dose*, $\frac{1}{2}$ to 1 grain.

TINCTURA CANNABIS INDICÆ.—Tincture of Indian Hemp (extract of Indian hemp, 1 oz. ; rectified spirit, 1 oct.); 22 grains of extract in one fluid ounce, nearly.

Dose, 5 to 20 minimæ.

Therapeutics.—Cannabis Indica produces a kind of intoxication, accompanied by exhilaration and hallucinations of the senses, generally said to be of a pleasing nature, and followed by sleep and stupor. The anodyne and soporific effects are said to be followed by less unpleasant after-effects than those of opium; no loss of appetite or constipation is induced. On account of its antispasmodic and anodyne powers, Indian Hemp is given in various forms of neuralgia, in whooping cough, asthma, tetanus and hydrophobia.

The urine of patients under the influence of the drug acquires an odour similar to that of the Tonquin bean.

A tolerance of opium appears to establish in the system a similar capability of resisting the action of Cannabis Indica.

Incompatibles.—When the tincture is added to water, a turbidity takes place from the resin being precipitated; it is therefore desirable to rub it up with mucilage, to suspend it, or to add a few drops of an alkaline solution, such as the aromatic spirit of ammonia.

2. HUMULUS LUPULUS. THE HOP.

Lupulus.—*Hop*.—The dried strobiles of the female plant of *Humulus Lupulus*. Cultivated in England.

Characters.—Strobiles of a greenish-yellow colour, with minute yellow grains (*Lupulin*) adherent to the base of the scales ; odour aromatic, taste bitter. *Lupulin*, the active principle, contains a bitter principle, *Humulin* or *Lupulite*.

Officinal Preparations.—*EXTRACTUM LUPULI*.—Extract of Hop (hop, 1lb. ; rectified spirit, 1½ oct. ; distilled water, 1 cong.). *Dose*, 5 to 15 grains.

INFUSUM LUPULLI.—Infusion of Hop (hop, ½ oz. ; boiling distilled water, 10 fl. oz.). *Dose*, 1 to 2 fluid ounces.

TINCTURA LUPULLI.—Tincture of Hop (hop, 2½ oz. : proof spirit, 1 oct.). *Dose*, ½ to 2 fluid drachms.

Therapeutics.—Stomachic, tonic, and somewhat narcotic ; given in dyspepsia, in choree ; and to diminish the tendency to nocturnal emissions.

Coniferae or Pinaceæ.

1. JUNIPERUS COMMUNIS. THE COMMON JUNIPER.

Juniperi Oleum.—*OIL OF JUNIPER*.—The oil distilled in Britain from the unripe fruit of *Juniperus Communis*.

Characters.—Colourless or pale greenish-yellow, of a sweetish odour and warm aromatic taste. The juniper “berries” are of the size of black currants, of a deep purple colour, with a glaucous bloom. They contain three angular seeds, having a turpentine odour.

Officinal Preparation.—*SPIRITUS JUNIPERI*.—Spirit of Juniper (oil of juniper, 1 fl. oz. ; rectified spirit, 49 fl. oz.).

Dose, ½ to 1 fluid drachm. Contained in *Mistura Creosotii*.

Therapeutics.—A powerful stimulant, acting especially on the kidneys. Chiefly used for its diuretic action in different forms of dropsey. Is contained in Gin and Hollands.

2. LARIX EUROPÆA. THE COMMON LARCH.

Laricis Cortex.—*LARCH BARK*.—The bark, deprived of its outer layer, of *Larix Europæa*.

Characters.—In flat pieces, from three to six inches long, and from two to four inches wide ; the inner surface is fibrous and yellow, and the outer surface, when denuded of epidermis, is reddish ; the epidermis is greyish, spotted with lichens and beaded with resinous exudation ; the odour faintly terebinthinate. Contains, in addition to turpentine, sugar, gum,

and tannic acid, a volatile substance, *Larixic acid* or *Larixinic Acid*, $C_{16}H_{10}O_8$, a solution of which, with persalts of iron, turns to a purple colour.

Officinal Preparation.—**TINCTURA LARICIS.**—Tincture of Larch (larch bark, in coarse powder, $2\frac{1}{2}$ oz.; rectified spirit, 1 oct.). *Dose*, 20 to 30 minimis.

Therapeutics.—Similar in action to other balsamic and terebinthinate remedies, but less apt to interfere with digestion, and more pleasant to the taste. It is stimulant, expectorant, and astringent; given in purpura and intestinal haemorrhage, also in chronic bronchitis and cystitis.

3.—*ABIES EXCELSA. THE SPRUCE FIR.*

Pix Burgundica.—**BURGUNDY PITCH.**—A RESINOUS EXUDATION from the stem of the *Abies Excelsa*. Melted and strained; imported from Switzerland.

Characters.—Hard and brittle, yet gradually taking the form of the vessel in which it is kept; opaque, varying in colour, but generally dull reddish-brown; of a peculiar, somewhat empyreumatic, perfumed odour, and aromatic taste, without bitterness; free from vesicles; gives off no water when heated.

Officinal Preparation.—**EMPLASTRUM PICIS.**—Pitch Plaster (Burgundy pitch, 26 oz.; common frankincense, 13 oz.; resin, $4\frac{1}{2}$ oz.; yellow wax, $4\frac{1}{2}$ oz.; expressed oil of nutmeg, 1 oz.; olive oil, 2 fl. oz.; water, 2 fl. oz.).

Burgundy Pitch is also contained in *Emplastrum Ferri*.

Therapeutics.—Externally a slight stimulant to the skin.

4.—*PINUS SYLVESTRIS. THE COMMON PINE.*

Pix Liquida.—**TAR.**—A BITUMINOUS LIQUID obtained from the wood of *Pinus Sylvestris* and other pines by destructive distillation.

Characters.—Thick, viscid, brownish-black, with a well-known peculiar odour. Tar contains *Colophonic Acid*, and an empyreumatic oil, from which are obtained creosote, paraffin, etc. Pitch is the altered resin, which results from the distillation of tar.

Officinal Preparation.—**UNGENTUM PICIS LIQUIDE.**—Ointment of Tar (tar, 5 oz.; yellow wax, 2 oz.).

Therapeutics.—An internal and external stimulant; exceedingly useful in chronic skin diseases, as psoriasis, eczema, and pityriasis. Given internally in bronchitic affections. Sometimes causes a black deposit in the urine. The vapour of tar is advantageously employed in phthisis and chronic bronchitis.

5.—PINUS —? ABIES —?

Resina.—**RESIN.**—The RESIDUE of the distillation of the turpentines from various species of *Pinus* and *Abies*.

Characters.—Translucent, yellowish, brittle, pulverisable, fracture shining; odour and taste faintly terebinthinate. It is easily fusible, and burns with a dense yellow flame and much smoke. It is coloured red by sulphuric acid. Contains three isomeric acids, *Pinic*, *Sylvic*, and *Pimamic* ($H_3C_20H_{29}O_3$).

Officinal Preparations.—**EMPLASTRUM RESINÆ.**—Resin Plaster (resin, 4 oz.; lead plaster, 2 lb.; hard soap, 2 oz.).

UNGUENTUM RESINÆ.—Ointment of Resin (resin, in coarse powder, 8 oz.; yellow wax, 4 oz.; simple ointment, 16 oz.).

Resin is also contained in *Charta Epispastica* and *Unguentum Terebinthinae*, in *Emplastra*; *Belladonnae*; *Calefaciens*; *Opii*; *Picis*; *Saponis*; and *Plumbi Iodidi*.

Therapeutics.—Used as external stimulant applications.

6.—JUNIPERUS SABINA.

Sabinæ Cacumina.—**SAVIN Tops.**—The fresh and dried TOPS of *Juniperus Sabina*. Collected in spring, from plants cultivated in Britain.

Characters.—Twigs densely covered with minute imbricated appressed leaves in four rows; odour strong, peculiar, and unpleasant; taste acrid, bitter, resinous, disagreeable.

Dose, in powder, 4 to 10 grains.

Officinal Preparations.—**TINCTURA SABINÆ.**—Tincture of Savin (savin tops, dried and coarsely powdered, $2\frac{1}{2}$ oz.; proof spirit, 1 oct.). *Dose, 20 minimis to 1 fluid drachm.*

UNGUENTUM SABINÆ.—Ointment of Savin (fresh savin tops, bruised, 8 oz.; yellow wax, 3 oz.; prepared lard, 16 oz.).

Oleum Sabinæ.—**OIL OF SAVIN.**—The oil distilled in Britain from fresh savin, *Juniperus Sabina*. *Dose, 1 to 5 minimis.*

Therapeutics.—An irritant, both internally and externally; apparently acts powerfully upon the uterus as an emmenagogue. Is used externally as an ointment, to keep up discharge from a blistered surface; and is sometimes given internally in cases of amenorrhœa when unaccompanied by congestion of the pelvic organs. In large doses it may produce abortion, and its administration is attended with great danger.

7.—ABIES BALSAMEA. BALM OF GILEAD FIR.

Terebinthina Canadensis.—**CANADA BALSAM.**—The TURPENTINE obtained by incision from the stem of *Abies Balsamea*. From Canada.

Characters.—A pale-yellow ductile oleo-resin, of the consistency of thin honey, with a peculiar agreeable odour, and a slightly bitter, feebly acrid taste; by exposure drying very slowly into a transparent adhesive varnish; solidifying when mixed with a sixth of its weight of magnesia.

Dose., 20 to 30 grains.

Contained in *Charta Epispistica* and *Collodium Flexile*.

8.—PINUS; PALUSTRIS, TÆDA, PINASTER.

Terebinthines Oleum.—**OIL OF TURPENTINE.**—The oil distilled from the oleo-resin (turpentine) obtained from *Pinus Palustris*, *Pinus Tæda*, and sometimes *Pinus Pinaster*.

Characters.—Limpid, colourless, with a strong peculiar odour, and pungent and bitter taste. It is inflammable; dissolves caoutchouc, sulphur, phosphorus, fats and resins; and with hydrochloric acid forms two artificial camphors, $C_{10}H_{16}HCl$ and $C_{10}H_{16}2HCl$. With water it forms three hydrates, viz., *Terpinol*, $(C_{10}H_{16})_2H_2O$, *Terpine*, $C_{10}H_{16}.2H_2O$, and *Terpine Hydrate*, $C_{10}H_{16}.3H_2O$.

Dose., 10 minimis to 4 fluid drachms.

Officinal Preparations.—**CONFECTIO TEREBINTHINÆ.**—Confection of Turpentine (oil of turpentine, 1 fl. oz.; liquorice root, in powder, 1 oz.; clarified honey, 2 oz.).

Dose., 60 to 120 grains.

ENEMA TEREBINTHINÆ.—Enema of Turpentine (oil of turpentine, 1 fl. oz.; mucilage of starch, 15 fl. oz.).

LINIMENTUM TEREBINTHINÆ.—Liniment of Turpentine (soft soap, 2 oz.; camphor, 1 oz.; oil of turpentine, 16 fl. oz.).

LINIMENTUM TEREBINTHINÆ ACETICUM.—Liniment of Turpentine and Acetic Acid (oil of turpentine, acetic acid, liniment of camphor, of each 1 fl. oz.).

UNGUENTUM TEREBINTHINÆ.—Ointment of Turpentine (oil of turpentine, 1 fl. oz.; resin, in coarse powder, 60 gr.; yellow wax, $\frac{1}{2}$ oz.; prepared lard, $\frac{1}{2}$ oz.).

Use.—An external stimulant application.

9.—PINUS TÆDA. THE FRANKINCENSE PINE. PINUS PALUSTRIS. THE SWAMP PINE.

Thus Americanum.—**COMMON FRANKINCENSE.**—The concrete TURPENTINE of *Pinus Tæda*, and *Pinus Palustris*. From the Southern States of North America.

Characters.—A softish, bright-yellow opaque solid, resinous, but tough, having the odour of American turpentine.

Contained in *Emplastrum Picis*.

Cupuliferae.**1.—QUERCUS INFECTORIA. THE DYER'S OAK.**

Galla.—**GALLS.**—EXCRESENCES on Quercus Infectoria caused by the punctures and deposited ova of an insect, the *Diplolepis Galle Tinctoriae*.

Characters.—Hard, heavy globular bodies, varying in size from half an inch to three-fourths of an inch in diameter, tuberculated on the surface, the tubercles and intervening spaces smooth; of a blueish-green colour on the surface, yellowish-white within, with a small central cavity; intensely astringent. Contains *Tannic Acid*, *Gallic Acid*, *Ellagic Acid*, and gummy extractive matters and salts.

Officinal Preparations.—***ACIDUM GALLICUM.**—Gallic Acid.

Dose, 2 to 10 grains.

***ACIDUM TANNICUM.**—Tannic Acid. **Dose,** 2 to 10 grains.

TINCTURA GALLÆ.—Tincture of Galls (galls, in coarse powder, 2½ oz.; proof spirit, 1 oct.).
Dose, ½ to 2 fluid drachms.

UNGUENTUM GALLÆ.—Ointment of Galls (galls, in fine powder, 80 gr.; benzoated lard, 1 oz.).

UNGUENTUM GALLÆ CUM OPIO.—Ointment of Galls and Opium (ointment of galls, 1 oz.; opium, in powder, 32 gr.).

Therapeutics.—The efficacy of gall nuts is due to the tannic and gallic acids contained in them. The action of these acids has been already described.*

2.—QUERCUS PEDUNCULATA.

Quercus Cortex.—**OAK BARK.**—The dried BARK of the small branches and young stems of Quercus Pedunculata. Collected in spring, from trees growing in Britain.

Characters.—Covered with a greyish shining epidermis, cinnamon-coloured on the inner surface, fibrous, brittle, and strongly astringent. Contains *Tannic* and *Gallic Acids*; also *Pectin* and *Querci-tannic Acid*, which differs from tannic acid in not yielding gallic acid when oxidised. The amount of tannic acid varies much according to the age of the branches from which the bark is taken.

Officinal Preparation.—**DECOCTUM QUERCUS.**—Decoction of Oak Bark (oak bark, bruised, 1½ oz.; distilled water, 1 oct.).

Therapeutics.—Rarely used except as an external astringent. The decoction is useful as a lotion, gargle, or injection, in leucorrhœa, in relaxed sore throat. Given internally when tannic acid is indicated.

* Part I.—Appendix.

Euphorbiaceæ.

1.—CROTON ELUTERIA. THE CASCARILLA.

Cascarilla Cortex.—**CASCARILLA BARK.**—The BARK of Croton Eluteria. From the Bahama Islands.

Characters.—In quills, two or three inches in length, and from two to five lines in diameter, dull-brown but more or less coated with white crustaceous lichens; breaks with a short resinous fracture; is warm and bitter to the taste; and emits a fragrant odour when burned. Contains a neutral bitter principle (*Cascarillin*), some tannic acid, colouring matter, and a volatile oil.

Officinal Preparations.—**INFUSUM CASCARILLÆ.**—Infusion of Cascarilla (cascarilla bark, in coarse powder, 1 oz.; boiling distilled water, 10 fl. oz.). *Dose*, 1 to 2 fluid ounces.

TINCTURA CASCARILLÆ.—Tincture of Cascarilla (cascarilla bark, bruised, 2½ oz.; proof spirit, 1 oct.).

Dose, ½ to 2 fluid drachms.

Therapeutics.—An aromatic stomachic and tonic, and probably a stimulating expectorant. Given in dyspepsia, in some forms of chronic bronchitis, and in recovery from acute diseases.

2.—CROTON TIGLIUM.

Crotonis Oleum.—**CROTON OIL.**—The OIL expressed from the seeds of Croton Tiglium.

Characters.—Slightly viscid; colour brownish-yellow, taste acrid, odour faintly nauseous. Contains *Tiglinic* and *Crotonic Acids*. The seeds are of a dull cinnamon-brown colour, about half an inch long and a quarter of an inch broad, and resemble castor oil seeds, but are rougher, and not marbled on their surface.

Doses, 1 or 2 drops placed on the tongue; or formed into a pill with crumb of bread; as an adjunct, $\frac{1}{2}$ of a drop and upwards.

Officinal Preparation.—**LINIMENTUM CROTONIS.**—Liniment of Croton Oil (croton oil, 1 fl. oz.; oil of cajuput, 3½ fl. oz.; rectified spirit, 3½ fl. oz.).

Therapeutics.—An intensely irritant, drastic purgative, frequently causing vomiting and nausea; given in obstinate constipation and cerebral affections, as apoplexy. In very minute quantities it may be used as an ordinary purgative.

Externally the oil gives rise to pustulation; and is a valuable counter-irritant when diluted with soap liniment or olive-oil.

Adulteration.—Other fixed oils, as castor oil, might be added. These would be difficult to detect.

3.—ROTTLERA TINCTORIA.

Kamala.—**KAMALA.**—A POWDER which consists of minute glands that cover the capsules of Rottlera Tinctoria. Imported from India.

Characters.—A fine granular mobile powder, of a brick-red colour; it is with difficulty mixed with water, but when boiled with alcohol the greater part is dissolved, forming a red solution. Ether dissolves most of it, the residue consisting principally of tufted hairs. It should be free from sand or earthy impurities. Consists of a resin, *Rottlerin*, with tannic acid, gum and volatile oil.

Dose, 30 grains to $\frac{1}{2}$ ounce, in thick gruel or honey.

Therapeutics.—A powerful vermifuge; much used in India for the treatment of tapeworm. It generally purges freely.

4.—RICINUS COMMUNIS. THE CASTOR OIL PLANT.

Ricini Oleum.—**CASTOR OIL.**—The OIL expressed from the seeds of Ricinus Communis. Imported chiefly from Calcutta.

Characters.—Viscid, colourless, or pale straw-yellow, having a slightly nauseous odour and a somewhat acrid taste. Contains three oily acids, *Ricinic*, *Ricin-Oleic*, and *Ricin-Stearic*, united with glycerine. The seeds are about the size of small beans, oval, compressed, obtuse at the ends, shining and smooth on the surface, of a light-ash colour, marbled with veins and dark spots.

Dose, 1 fluid drachm to 1 fluid ounce. It is often given, floating in some fluid, in the form of an emulsion, with some aromatic, or in gelatine or membranous capsules.

Castor oil is used in the preparation of Collodium Flexile, Linimentum Sinapis Compositum, and Pilula Hydrargyri Subchloridi Composita.

Therapeutics.—A quick, but mild purgative, causing little disturbance of the system more than the evacuation of the bowels. Given to delicate persons, and in gastritis, enteritis, dysentery, cystitis.

Adulterations.—Other fixed oils, difficult to detect.

Lauraceæ.

1.—CAMPHORA OFFICINARUM.

Camphora.—**CAMPHOR** ($C_{10}H_{16}O$).—A CONCRETE VOLATILE OIL obtained from the wood of Camphora Officinarum. Imported in the crude state from China and Japan, and purified by sublimation in this country.

Characters.—White, translucent, tough, and crystalline; has a powerful penetrating odour and a pungent taste, followed by a sensation of cold; floats on water, volatilises slowly at ordinary temperatures; is slightly soluble in water, but readily so in rectified spirit and ether. Sublimes entirely when heated.

When heated with nitric acid, camphor is oxidised to *Camphoric Acid* ($C_{10}H_{14}O_4$), and *Camphoretic Acid* ($C_{10}H_{14}O_7$). When heated in alcohol with caustic potash it is converted into *Camphic Acid* ($HC_{10}H_{14}O_2$), and *Camphol*, or *Borneo Camphor* ($C_{10}H_{14}O$). *Dose*, 1 to 10 grains.

Officinal Preparations.—*AQUA CAMPHORÆ*.—Camphor Water (camphor, broken into pieces, $\frac{1}{2}$ oz.; distilled water, 1 conq.). *Dose*, 1 to 2 fluid ounces.

LINIMENTUM CAMPHORÆ.—Liniment of Camphor (camphor, 1 oz.; olive oil, 4 fl. oz.).

Used in Linimenta; Chloroformi; Hydrargyri; Terebinthinae Aceticum.

LINIMENTUM CAMPHORÆ COMPOSITUM.—Compound Liniment of Camphor (camphor, $2\frac{1}{2}$ oz.; oil of lavender, 1 fl. dr.; strong solution of ammonia, 5 fl. oz.; rectified spirit, 15 fl. oz.).

SPIRITUS CAMPHORÆ.—Spirit of Camphor (camphor, 1 oz.; rectified spirit, 9 fl. oz.).

Dose, 10 to 30 minims suspended in water by means of mucilage.

TINCTURA CAMPHORÆ COMPOSITA.—Compound Tincture of Camphor (opium, in coarse powder, 40 gr.; benzoic acid, 40 gr.; camphor, 30 gr.; oil of anise, $\frac{1}{2}$ fl. dr.; proof spirit, 1 oct.). 1 grain of opium in $\frac{1}{2}$ fluid ounce.

Dose, 15 minims to 1 fluid drachm.

Camphor is contained in *Unguentum Hydrargyri Compositum* and *Unguentum Plumbi Subacetatis Compositum*, and in several liniments.

Therapeutics.—Poisonous to the lowest forms of vegetable and animal life; acts like a narcotic poison upon insects and many animals. When applied in substance it is an irritant to mucous membranes and raw surfaces. When camphor is administered in very large doses, i.e., 30—100 grains to the human subject, dangerous symptoms may arise, viz., giddiness, vomiting, coldness of the extremities, muscular debility, feeble pulse, unconsciousness, and even death. Medicinally employed, it is stimulant and antispasmodic. It has apparently some antipyretic influence. It may be given in choleraic diarrhoea and adynamic fevers; in some spasmodylic affec-

tions, as pertussis, epilepsy and chorea; in hysteria, in chordee; as a calmative in disorders associated with sexual excitement. Externally it is applied as a stimulant to stiff and painful parts.

Adulterations.—Borneo Camphor, from a plant of the order Guttiferae (Dryobalanops Camphora).

An artificial camphor can be made by passing hydrochloric acid gas through the volatile oil of camphor.

2.—CINNAMOMUM ZEYLANICUM.

Cinnamomi Cortex.—CINNAMON BARK.—The inner BARK of shoots from the truncated stocks of *Cinnamomum Zeylanicum*. Imported from Ceylon, and distinguished in commerce as Ceylon Cinnamon.

Characters.—About one-fifth of a line thick, in closely-rolled quills, which are about four lines in diameter, containing several small quills within them, light yellowish-brown, with a fragrant odour and warm sweet aromatic taste; breaks with a splintery fracture.

Officinal Preparations.—AQUA CINNAMOMI. — Cinnamon Water (cinnamon bark, bruised, 20 oz.; water, 2 cong. Distil one gallon). *Dose*, 1 to 2 fluid ounces.

PULVIS CINNAMOMI COMPOSITUS.—Compound Powder of Cinnamon (cinnamon bark, in powder, cardamom seeds, in powder, ginger, in powder, of each 1 oz.).

Dose, 3 to 10 grains.

Contained in Pilula Aloes et Ferri and Pilula Cambogiae Composita.

INCTURA CINNAMOMI.—Tincture of Cinnamon (cinnamon bark, in coarse powder, 2½ oz.; proof spirit, 1 oct.).

Dose, ½ to 2 fluid drachms.

Cinnamon bark is also contained in Acidum Sulphuricum Aromaticum, Tinctura Cardamomi Composita, Tinctura Lavandulae Composita, and other preparations.

CINNAMOMI OLEUM.—OIL OF CINNAMON.—The oil distilled from Cinnamon Bark.

Characters.—Yellowish when recent, gradually becoming red, from the formation (by oxidation) of a resinous matter and *Cinnamic Acid* ($\text{HC}_9\text{H}_7\text{O}_2$), having the odour and taste of cinnamon. Sinks in water. Contains *Cinnamyl Hydride* ($\text{C}_9\text{H}_7\text{OH}$), and a small quantity of a hydrocarbon ($\text{C}_{10}\text{H}_{16}$).

Therapeutics.—Stimulant, aromatic and carminative; somewhat astringent; used as an adjunct in diarrhoea.

The oil may be given in flatulence, and as a corrigent to purgatives.

Adulterations.—The bark of Chinese Cinnamon (from *Cinnamomum Cassia*), known by its greater roughness and thickness, and its less aromatic odour and taste.

3.—NECTANDRA RODLAEI. THE GREENHEART TREE.

Nectandra Cortex.—*BEBEERU BARK.*—The BARK of *Nectandra Rodlei*. Imported from British Guiana.

Characters.—In large, flat heavy pieces, from one to two feet long, from two to six inches broad, and about a quarter of an inch thick. External colour greyish-brown, internal dark cinnamon-brown. Taste strongly and persistently bitter, with considerable astringency. Contains Tannic Acid and two alkaloids, *Beberia* ($C_{19}H_{21}NO_3$), and *Nectandria* ($C_{20}H_{22}NO_4$).

Officinal Preparation.—*BEBERLE SULPHAS.*—Sulphate of Beberia, $C_{25}H_{40}N_2O_6 \cdot H_2SO_4$. The sulphate of an alkaloid prepared from Bebeerus Bark (bebeerus bark, in coarse powder, 1 lb.; sulphuric acid, $\frac{1}{2}$ fl. oz.; slaked lime, $\frac{2}{3}$ oz. or a sufficiency; solution of ammonia, a sufficiency; rectified spirit, 16 fl. oz. or a sufficiency; diluted sulphuric acid, a sufficiency; water, 1 conq.; distilled water, a sufficiency).

Characters.—In dark-brown, thin translucent scales, yellow when in powder, with a strong bitter taste. Its watery solution gives with caustic soda a *yellowish-white* precipitate of Beberia. *Dose*, 1 to 10 grains.

Therapeutics.—The bark is seldom given. The sulphate of beberia has been used as a substitute for quinine; it somewhat resembles the cinchona alkaloids, and it is stated to be useful in periodic headaches. It may act as a tonic, but is a very imperfect substitute for quinine. Cases of ague, which have yielded rapidly to the action of quinine, have been unaffected by sulphate of beberia in doses large enough to produce gastric disturbance.

4.—SASSAFRAS OFFICINALE.

Sassafras Radix.—*SASSAFRAS Root.*—The dried ROOT of *Sassafras Officinale*. From North America.

Characters.—In branched pieces, sometimes eight inches in diameter at the crown; bark externally greyish-brown, internally rusty-brown, of an agreeable odour, and a peculiar aromatic warm taste; wood light, porous, greyish-yellow, more feeble in odour and taste than the bark; also in chips.

Contains tannic acid, red colouring matter, and a volatile oil consisting of a hydrocarbon, *Safren* ($C_{10}H_{16}$), sassafras camphor or *Sassafrrol* ($C_{10}H_{10}O_2$), and an isomer, *Safrol*.

Sassafras Root is contained in Decoctum Sarsæ Compositum.

Therapeutics.—Diaphoretic and stimulant, seldom given alone; may be used in skin diseases, syphilis and chronic rheumatism. The volatile oil (Oleum Sassafras) may be given in doses of 1 to 5 minimis.

Liquidambaraceæ.

LIQUIDAMBAR ORIENTALE.

Styrax Præparatus.—PREPARED STORAX.—A BALSAM obtained from the bark of Liquidambar Orientale. Purified by means of rectified spirit and straining.

Characters.—A semi-transparent brownish-yellow semi-fluid resin, of the consistence of thick honey, with a strong agreeable fragrance and aromatic bland taste; boiled with solution of bichromate of potash and sulphuric acid, it evolves the odour of bitter almonds. Heated in a test-tube in a vapour-bath it becomes more liquid, but gives off no moisture.

Contains a volatile oil, (*Styrol*), *Cinnamic Acid*, *Styracinc*, and resin. *Dose*, 5 to 20 grains.

Prepared Storax is contained in Tinctura Benzoini Composita.

Therapeutics.—Stimulant to the mucous membranes, and a stimulating application to ulcers.

Moraceæ.

1.—FICUS CARICA. THE FIG.

Ficus.—FIG.—The dried FRUIT (Syconus) of Ficus Carica. Imported from Smyrna.

Figs contain chiefly saccharine and mucilaginous matters. They are used in preparing Confectio Sennæ.

Dose, ad libitum.

Therapeutics.—Nutritive, laxative, and demulcent.

2.—MORUS NIGRA. THE MULBERRY.

Mori Succus.—MULBERRY JUICE.—The JUICE of the ripe fruit of Morus Nigra.

Characters.—Of a dark violet colour, with a faint odour, and an acidulous sweet taste.

Officinal Preparation.—SYRUPUS MORI.—Syrup of Mul-

berries (mulberry juice, 1 oct. ; refined sugar, 2 lb. ; rectified spirit, 2½ fl. oz.). Dose, 1 fluid drachm.

Therapeutics.—Mulberry juice is given as a refrigerant in fevers. The syrup is frequently used as a colouring agent.

Myristicaceæ.

MYRISTICA OFFICINALIS. THE NUTMEG.

Myristica.—**NUTMEG.**—The KERNEL of the seed of *Myristica Officinalis*. Cultivated extensively in the Banda Islands of the Malayan Archipelago.

Characters.—Oval or nearly round, about an inch in length, marked externally with reticulated furrows, internally greyish-red, with dark-brownish veins. It has a strong peculiar odour, and a bitter aromatic taste.

Dose, in powder, 5 to 15 grains.

Nutmeg is an ingredient of *Pulvis Catechu Compositus*, *Pulvis Cretæ Aromaticus*, *Spiritus Armoraciæ Compositus*, and *Tinctura Lavandulæ Composita*.

Myristicæ Oleum.—**VOLATILE OIL OF NUTMEG.**—The oil distilled in Britain from Nutmeg.

Characters.—Colourless or straw-yellow, having the odour and taste of nutmegs.

Contains an oxygenated oil, *Myristicol*, isomeric with *Carvol*. *Dose, 1 to 5 minimi.*

Officinal Preparation.—**SPIRITUS MYRISTICÆ.**—Spirit of Nutmeg (volatile oil of nutmeg, 1 fl. oz. ; rectified spirit, 49 fl. oz.). *Dose, ½ to 1 fluid drachm.* Contained in *Mistura Ferri Composita*.

Volatile oil of nutmeg is also contained in *Pilula Aloes Socotrinæ*, and *Spiritus Ammoniaæ Aromaticus*.

Myristicæ Oleum Expressum.—**EXPRESSED OIL OF NUTMEG.**—A CONCRETE OIL obtained by means of expression and heat from nutmegs.

Characters.—Of an orange colour, firm consistence, and fragrant odour like that of nutmeg. Commonly known as “Butter of Nutmeg.” Contains the volatile oil and fatty acids, amongst them *Myristicin* ($C_{48}H_{86}O_6$), united with Glycerine.

Used in the preparation of *Emplastrum Calefaciens* and *Emplastrum Picis*.

Therapeutics.—A gentle aromatic stimulant and carminative. In large doses nutmeg is stated to possess marked narcotic properties, causing drowsiness, even passing into complete insensibility. It is more generally used as a flavouring

agent than as a medicine. The expressed oil, when applied externally, acts as a topical stimulant, and has been used in chronic rheumatism.

Piperaceæ.

1.—CUBEBA OFFICINALIS. THE CUBEB PEPPER.

Cubeba.—**CUBEBS.**—The dried unripe FRUIT of *Cubeba Officinalis*. Cultivated in Java.

Characters.—The size of black pepper, globular, wrinkled, blackish, supported on a stalk or tail of rather more than its own length; has a warm camphoraceous taste and characteristic odour. Contains a volatile oil ($C_{30}H_{48}$), an inert substance (*Cubebin*), and *Cubebic Acid*.

Dose, in powder, 30 to 120 grains.

Officinal Preparations.—**TINCTURA CUBEBS.**—Tincture of Cubebs (cubebs, in powder, $2\frac{1}{2}$ oz.; rectified spirit, 1 oct.).

Dose, $\frac{1}{2}$ to 2 fluid drachms.

CUBEBS Oleum.—**OIL OF CUBEBS.**—The OIL distilled in Britain from Cubebs.

Characters.—Colourless or pale greenish-yellow, having the peculiar odour and taste of cubeba.

Therapeutics.—Used for its stimulant action upon the urethral, vesical and other mucous membranes, from the surfaces of which it appears to have the power of arresting morbid discharge. Used in gonorrhœa and obstinate coryza.

2.—ARTANTHE ELONGATA. THE MATICO PLANT.

Maticæ Folia.—**MATICO LEAVES.**—The dried LEAVES of *Artanthe Elongata* (*Piper Angustifolium*). Imported from Peru.

Characters.—From two to eight inches long, veined and tessellated on the upper surface, downy beneath, with an aromatic, slightly astringent, warm taste, and an agreeable aromatic odour. Contains a trace of tannin, a volatile oil, and *Arthantic Acid*.

Dose of the powder, internally, 30 to 60 grains.

Officinal Preparations.—**INFUSUM MATICÆ.**—Infusion of Matico (matio leaves, cut small, $\frac{1}{2}$ oz.; boiling distilled water, 10 fl. oz.). *Dose, 1 to 4 fluid ounces.*

Therapeutics.—Acts as a powerful styptic when the leaf* or powder is applied to bleeding surfaces, as leech bites. Given internally, it is said to be astringent to the genito-urinary mucous membrane and rectum. Similar in its action to that of cubebs and black pepper.

* The styptic power is supposed to be due to the mechanical structure of the leaf.

3.—PIPER NIGRUM. BLACK PEPPER

Piper Nigrum.—BLACK PEPPER.—The dried unripe *BERRIES* of *Piper Nigrum*. Imported from the East Indies.

Characters.—Small, roundish, wrinkled; tegument brownish-black, containing a greyish-yellow globular seed; odour aromatic; taste pungent and bitterish. When decorticated forms WHITE PEPPER. Contains an *acrid resin*, a volatile oil, and *Piperia* ($C_{17}H_{19}NO_3$), isomeric with Morphia, and decomposed by nitric acid into *Piperic Acid* ($HC_{12}H_9O_4$) and the alkaloid *Piperidina* ($C_5H_{11}N$), or *Amyl Nitride*.

Dose, in powder, 5 to 20 grains.

Officinal Preparation.—CONFECTIO PIPERIS.—Confection of Pepper (black pepper, in fine powder, 2 oz.; caraway fruit, in fine powder, 3 oz.; clarified honey, 15 oz.).

Dose, 60 to 120 grains.

Pepper is also contained in *Confectio Opii* and *Pulvis Opii Compositus*.

Therapeutics.—Chiefly used as a condiment. Is a stimulant stomachic, and is valuable in haemorrhoids and in gonorrhœa, on account of its influence upon the mucous membrane of the rectum and of the urethra. Pepper, or the oil, may be used externally as a rubefacient. The oil has been sometimes topically applied to relaxed sore throats.

Polygonaceæ.

RHEUM OFFICINALE?

Rhei Radix.—RHUBARB Root.—The dried root, deprived of the bark, of *Rheum Officinale*, growing in Western China and Thibet. In this definition is included the Russian, the East Indian or Half-trimmed, and the Dutch-trimmed or Batavian Rhubarbs. Rhubarb is no longer brought overland through Russia, but is imported from Shanghai and Canton.

Characters.—The *Russian*, or so-called *Turkey* Rhubarb, occurs in trapezoidal, irregular-shaped, flat or cylindrical angular pieces, the cortex having been removed by slicing; yellow externally, not turned reddish-brown by boracic acid, showing the absence of turmeric; internally marked with fine waving greyish and reddish lines; finely gritty under the teeth, from the presence of raphides* of insoluble oxalate of lime; taste bitter, faintly astringent and aromatic, tinging the saliva bright yellow; odour peculiar; free from decay,

* Needle-shaped or acicular crystals.

not worm-eaten. The pieces are frequently bored with a hole. The powder is bright buff-yellow.

The *East Indian* variety is not angular, but slightly rounded, with portions of the cortex adhering; externally red and veined, not covered with yellow powder like the preceding variety. It is also denser, less gritty, and the powder is of a redder hue.

The *Batavian* variety is in round or flattened pieces, angular, and drilled with a hole. Its origin is probably the same as the Russian.

Rhubarb contains starch, tannic and gallic acids, oxalate of lime, and an aperient principle now supposed to be *Chrysophanic Acid* ($C_{14}H_8O_4$), and to which the yellow colour is due. This acid also exists in great quantities in "Goa Powder."

Dose of powdered rhubarb, 1 to 5 grains, as a stomachic; 10 to 30 grains as a purgative.

Officinal Preparations.—**EXTRACTUM RHEI**.—Extract of Rhubarb (rhubarb root, sliced or bruised, 1 lb.; rectified spirit, 10 fl. oz.; distilled water, 5 oct.).

Dose, 5 to 15 grains.

INFUSUM RHEI.—Infusion of Rhubarb (rhubarb root, in thin slices, $\frac{1}{2}$ oz.; boiling distilled water, 10 fl. oz.).

Dose, 1 to 2 fluid ounces.

PILULA RHEI COMPOSITA.—Compound Rhubarb Pill (rhubarb root, in powder, 3 oz.; socotrine aloes, in powder, $2\frac{1}{2}$ oz.; myrrh, in powder, $1\frac{1}{2}$ oz.; hard soap, in powder, $1\frac{1}{2}$ oz.; oil of peppermint, $1\frac{1}{2}$ fl. dr.; treacle, by weight, 4 oz.).

Dose, 5 to 10 grains.

PULVIS RHEI COMPOSITUS.—Compound Powder of Rhubarb (rhubarb root, in powder, 2 oz.; light magnesia, 6 oz.; ginger, in powder, 1 oz.). *Dose*, 20 to 60 grains.

SYRUPUS RHEI.—Syrup of Rhubarb (rhubarb root, in coarse powder, 2 oz.; coriander fruit, in coarse powder, 2 oz.; refined sugar, 24 oz.; rectified spirit, 8 fl. oz.; distilled water, 24 fl. oz.). *Dose*, 1 to 4 fluid drachms.

TINCTURA RHEI.—Tincture of Rhubarb (rhubarb root, in coarse powder, 2 oz.; cardamon seeds, freed from the pericarps, and bruised, $\frac{1}{2}$ oz.; coriander fruit, bruised, $\frac{1}{2}$ oz.; saffron, $\frac{1}{2}$ oz.; proof spirit, 1 oct.).

Dose, 1 to 2 fluid drachms, as a stomachic; 4 to 8 fluid drachms, as a purgative.

VINUM RHEI.—Wine of Rhubarb (rhubarb root, in coarse powder, $1\frac{1}{2}$ oz.; canella bark, in coarse powder, 60 gr.; sherry, 1 oct.). *Dose*, 1 to 2 drachms.

Therapeutics.—In small doses a slight aperient astringent and stomachic. The aperient action is generally followed by constipation. It causes no irritation of the alimentary canal. The perspiration, the milk, and the urine become coloured by rhubarb. It may be used in diarrhoea dependent upon irritating matter, which is thus expelled, and the subsequent astringency of the drug is very serviceable. It is also useful in cases of dyspepsia attended by constipation ; but when given for habitual constipation, it should be combined with some other laxative. It is often usefully combined with magnesia or soda, especially when given to children, in the treatment of whose complaints it is notably valuable when combined with a mercurial alterative. Externally it has been applied to indolent ulcers.

Adulterations.—Extensively adulterated ; inferior varieties, as the English, being substituted for the Russian, etc. Turmeric may be present, which is reddened by boracic acid. In English rhubarb oxalate of lime exists only in small quantities, and starch is generally in excess ; the reverse is the case in the Chinese varieties.

Thymelaceæ.

DAPHNE MEZREUM. DAPHNE LAUREOLA, THE SPURGE LAUREL.

Mezerei Cortex.—**MEZEREON BARK.**—The dried BARK of Daphne Mezereum or of Daphne Laureola.

Characters.—In strips or quilled pieces of various lengths, tough and pliable, olive-brown on the surface, white within, fibrous ; odour faintly nauseous ; taste hot and acrid. Contains an acrid resin, a volatile oil, and a crystalline substance, *Daphnin* ($C_{21}H_{34}O_{10}$), which, when boiled with dilute sulphuric acid, yields *Daphnetin* ($C_{19}H_{14}O_9$). Contained in Decoction Sarsæ Compositum.

Officinal Preparation.—**EXTRACTUM MEZERÆ AETHERÆM.**—Ethereal Extract of Mezereon (mezereon bark, cut small, 1 lb. ; rectified spirit, 8 oct. ; ether, 1 oct.). Contained in Linimentum Sinapis Compositum.

Therapeutics.—A powerful local irritant, and even vesicant. In large doses causes purging and vomiting ; in small, it is a diaphoretic and diuretic. Has been used in syphilis, scrofula, chronic rheumatism, and skin diseases. It is seldom given internally in England, except in Decoction Sarsæ Compositum. Used externally in the Linimentum Sinapis Compositum.

Ulmaceæ.

ULMUS CAMPESTRIS. THE BROAD-LEAVED ELM.

Ulmus Cortex.—**ELM BARK.**—The dried inner **BARK** of *Ulmus Campestris*. From trees indigenous to and cultivated in Britain.

Characters.—A tough brownish-yellow bark, about half a line thick, without smell; taste mucilaginous, slightly bitter and astringent. Its decoction is turned green by perchloride of iron, and precipitates a solution of gelatine; showing the presence of tannic acid.

Officinal Preparation.—**DECOCTUM ULCI.**—Decoction of Elm Bark (elm bark, cut in small pieces, $2\frac{1}{2}$ oz.; distilled water, 1 oct.). *Dose*, 2 to 4 fluid ounces.

Therapeutics.—Demulcent, slightly tonic and astringent; has been used in chronic skin affections, as psoriasis and leprosy; is considered by some to be a valuable alterative. The decoction sometimes produces diaphoresis and diuresis.

CLASS II. ENDOGENÆ.

Graminaceæ.

1.—TRITICUM VULGARE. THE COMMON WHEAT.

Amylum.—**STARCH** ($C_6H_{10}O_5$).—The STARCH procured from the seeds of *Triticum Vulgare*.

Characters and Tests.—In white columnar masses. Microscopically consists of small transparent granules, with concentric rings surrounding the central hilum. Each granule consists of a thin external albuminous coat, which contains a substance termed Gelatinous Starch or Amiden. When starch is rubbed in a Wedgewood mortar with a little cold distilled water, it is neither acid nor alkaline to test paper, and the filtered liquid does not become blue on the addition of solution of iodine. Mixed with boiling water and cooled, it gives a deep blue colour with iodine. Boiling is necessary, in order that the contents of the granules may swell and burst their envelope. When heated for some time with dilute sulphuric acid, starch is converted first into its soluble isomer, *Dextrine*, and subsequently into *Glucose* (grape-sugar). It is changed by nitric acid into oxalic acid.

Officinal Preparations.—**GLYCERINUM AMYLI.**—Glycerine of Starch (starch, 1 oz.; glycerine, 8 fl. oz.).

MUCILAGO AMYLI.—Mucilage of Starch (starch, 120 gr.; distilled water, 10 fl. oz.). Used in the following Enemata: Aloes; Magnesia Sulphatis; Opii; Terebinthinæ. Starch is also contained in *Pulvis Tragacanthæ Compositus*.

Therapeutics.—A mild nutritive demulcent; used in the form of the mucilage as a vehicle for enemata; combined with glycerine, it is useful as a sheathing in cases of chilblains and roughness of the skin.

Farina Triticæ.—**WHEATEN FLOUR.**—The grain of wheat, *Triticum Vulgare*, ground and sifted. Consists of starch and *gluten*, together with gum, sugar, mucilage and water, and small quantities of phosphates of soda, lime and magnesia. If kneaded under a stream of water, the starch is washed away and the *gluten* is left as a tenacious, adhesive, greyish-white mass. Gluten thus prepared consists of *vegetable albumen*, insoluble in alcohol, and *vegetable fibrine*, soluble in alcohol. Contained in *Cataplasma Fermenti*.

Mica Panis.—**CRUMB OF BREAD.**—The soft part of bread made with wheaten flour. Contained in *Cataplasma Carbonis*.

Therapeutics.—Flour is used chiefly in the form of bread-crums for giving consistency to pills; it is also employed as a cataplasma.

2.—HORDEUM DISTICHON.

Hordeum Decorticatum.—**PEARL BARLEY.**—The husked seeds of *Hordeum Distichon*. Cultivated in Britain.

Characters.—White, rounded, retaining a trace of the longitudinal furrow. Consists of the seeds decorticated and rounded in a mill. Contains gluten, starch, gum and saccharine matters.

Officinal Preparation.—**DECOCIMUM HORDEI.**—Decoction of Barley (pearl barley, 2 oz.; distilled water, 1½ oct.).

Dose, ad libitum.

Therapeutics.—The decoction is a mild nutritive and demulcent drink.

3.—SECALE CEREALE; THE COMMON RYE. SECALE CORNUTUM; THE SPURRED RYE.

Ergota.—**ERGOT.**—The sclerotium (compact mycelium or spawn), of a fungus, the *Claviceps Purpurea*, produced within the paleæ of the *Secale Cereale*. (*Secale Cornutum*).

Characters.—Subtriangular grains, curved, with a longitudinal furrow on the concave side, obtuse at the ends; from one-third of an inch to an inch and a half in length; of a violet-brown colour on the surface, pinkish within, solid, frangible, fracture short, colour faintly marked, but strong if the powder be triturated with solution of potash. The grains

somewhat resemble the spur of a cock, hence the name "Spurred Rye."

Contains two bases, *Ergotine* and *Ecboline*, united with *Ergotic Acid*. The activity of the drug has been lately ascribed to *Sclerotic* or *Sclerotinic Acid*. Ergot also contains a fluid fixed oil, starch, gum, sugar and resin. It is liable to be fed upon by a species of acarus, which sometimes destroys the whole interior. *Dose*, in powder, 20 to 30 grains.

Officinal Preparations.—**EXTRACTUM ERGOTÆ LIQUIDUM**.—Liquid Extract of Ergot (ergot, in coarse powder, 1 lb. ; ether, 1 oct., or a sufficiency ; distilled water, $3\frac{1}{2}$ oct. ; rectified spirit, 8 fl. oz.). *Dose*, 10 to 30 minima.

INFUSUM ERGOTÆ.—Infusion of Ergot (ergot, in coarse powder, $\frac{1}{2}$ oz. ; boiling distilled water, 10 fl. oz.).

Dose, 1 to 2 fluid ounces.

TINCTURA ERGOTÆ.—Tincture of Ergot (ergot, in coarse powder, 5 oz. ; proof spirit, 1 oct.).

Dose, 10 minima to 1 fluid drachm.

Therapeutics.—It has been shown by experiments that ergot contracts the minute arteries by acting upon their muscular walls, and consequently increases the systemic blood-pressure. This action upon the arterioles is not prevented by previous division of the vaso-motor nerves. Injected into the jugular vein, it contracts the pulmonary arterioles, and thus suddenly diminishes the blood-pressure in the systemic arteries. Ergot acts in a peculiar manner upon the uterus, causing powerful contractions, especially when the patient is pregnant. If taken in small quantities for some length of time, as in bread made from ergotised grain, a species of gangrene, similar to senile gangrene, is produced ; this effect is probably due to obstruction of the vessels by diminution of their calibre. Large doses may produce nausea, vomiting, delirium, and even death.

Ergot is usually employed to cause contraction of the uterus during labour, the contractions so produced differing from the natural ones in being continuous, and not alternating with relaxation. It is very valuable in menorrhagia, leucorrhœa, and in cases of amenorrhœa, dependent rather upon torpor of the uterus than upon anaemia. It is also useful in haemorrhage after delivery. Lastly, ergot is an important remedy for arresting haemorrhage from whatever cause produced, and it has been given in many other diseases, as in paraplegia.

4.—SACCHARUM OFFICINARUM. CANE SUGAR.

Saccharum Purificatum.—REFINED SUGAR ($C_{12}H_{22}O_{11}$).—Pure CANE SUGAR (Sucrose) prepared from the juice of the stem of *Saccharum Officinarum*. From plants cultivated in the West Indies and other tropical countries.

Characters.—Compact, crystalline, conical loaves, known in commerce as lump sugar. Is soluble in half its weight of cold water; much more soluble in hot water, forming a viscid syrup. The aqueous solution deviates the plane of polarisation to the right hand. When crystallised from a strong solution, oblique four-sided prisms of "sugar-candy" are formed. Heated to 365° Fahr., cane sugar melts, and, after sudden cooling, solidifies to "barley-sugar," an amorphous transparent substance.

Prolonged boiling converts Sucrose into Levulose (uncrystallisable fruit sugar); if the boiling be continued it is transformed into Glucose (grape sugar), $C_6H_{12}O_6$. Weak acids and fermentation effect a similar change. The following table shows the differences between Cane and Grape Sugar :

SUCROSE.	GLUCOSE.
(1.) Charred by cold sulphuric acid.	(1.) Not charred by cold sulphuric acid.
(2.) Does not reduce an alkaline solution of a cupric salt.	(2.) Reduces an alkaline solution of a cupric salt.
(3.) Is not altered in colour by boiling with liquor potassæ.	(3.) Produces a brown coloration when boiled with liquor potassæ.
(4.) Less soluble in water.	(4.) More soluble in water.
(5.) Crystallises in 4-sided or 6-sided rhombic prisms.	(5.) Crystallises in square tables or cubes.

The sugars are termed carbo-hydrates, since they contain hydrogen and oxygen in the proportions to form water; the number of carbon atoms is six, or some multiple of this number. Starch, gum, and cellulose are also carbo-hydrates.

Officinal Preparation.—SYRUP.—Syrup (refined sugar, 5 lb.; distilled water, 2 oct.). *Dose, ad libitum.*

Used in forming the other syrups of the Pharmacopœia, and numerous other preparations.

Therapeutics.—Demulcent; useful, from its sweet taste, to disguise remedies the flavour of which is unpleasant.

Adulterations.—May contain sulphate of lime, and also lead in minute quantities. These may be harmless when

sugar is employed medicinally, but not so when the substance is used in considerable quantities daily for domestic purposes.

Theriaca.—**TREACLE.**—The uncrystallised residue of the refining of sugar.

Characters.—A thick, brown, fermentable syrup, very sweet; not crystallising by rest or evaporation. Fermentable with yeast, yielding rum by distillation.

Tests.—Nearly free from empyreumatic odour or flavour. Treacle is used in the preparation of the following Piluleæ : Assafetidæ Composita ; Conii Composita ; Ipecacuanhæ cum Scilla ; Rhei Composita ; Scillæ Composita.

Therapeutics.—A slight laxative in doses of a teaspoonful and upwards; often given in combination with sulphur.

Iridaceæ.

CROCUS SATIVUS.

Crocus.—**SAFFRON.**—The dried STIGMA and part of the STYLE of Crocus Sativus. Imported from Spain, France and Italy.

Characters.—Thread-like styles, each terminated by three long orange-brown stigmas, broadest at the summit; has a powerful aromatic odour. Rubbed on the wet finger, it leaves an intense orange-yellow tint. When pressed between the folds of white filtering paper it leaves no oily stain. The colouring matter is due to *Polychroit* yielding, by decomposition, a volatile oil, and *Crocin*, a red colour, turned blue by sulphuric acid, green by nitric acid. “Hay Saffron” is the name given to the finest saffron dried loosely; the inferior kind, “Cake Saffron,” is dried under pressure.

Dose (dried), from 20 grains and upwards.

Officinal Preparation.—**TINCTURA CROCI.**—Tincture of Saffron (saffron, 1 oz.; proof spirit, 1 oct.).

Dose, $\frac{1}{2}$ drachm to 2 drachms.

Saffron is also contained in Decoctum Aloes Compositum, Pilula Aloes et Myrrhæ, Pulvis Cretæ Aromaticus, Tinctura Cinchonæ Composita, Tinctura Opii Ammoniata, and Tinctura Rhei.

Therapeutics.—Has a very slight stimulant action; is chiefly used as a colouring agent.

Adulterations.—Safflower and marigold petals, and saffron petals are often present.

The safflower petals ground together constitute the so-called “Cake Saffron.”

Liliaceæ.

1.—ALOE VULGARIS. ALOE — ?

L Aloe Barbadensis.—**BARBADOES ALOES.**—The INSPISATED JUICE of the leaf of *Aloe Vulgaris*. Imported from Barbadoes.

Characters.—In yellowish-brown or dark-brown opaque masses ; breaks with a dull conchoidal fracture ; has a bitter nauseous taste, and a strong disagreeable odour ; powder of a dull olive-green colour, more soluble than the socotrine variety ; usually imported in gourds. *Dose*, 2 to 6 grains.

Officinal Preparations.—**ENEMA ALOES.**—Enema of Aloes (Barbadoes aloes, 40 gr. ; carbonate of potash, 15 gr. ; mucilage of starch, 10 fl. oz.).

EXTRACTUM ALOES BARBADENSIS.—Extract of Barbadoes Aloes (Barbadoes aloes, in small fragments, 1 lb. ; boiling distilled water, 1 conq.). *Dose*, 2 to 6 grains.

PILULA ALOES BARBADENSIS.—Pill of Barbadoes Aloes (Barbadoes aloes, in powder, 2 oz. ; hard soap, in powder, 1 oz. ; oil of caraway, 1 fl. dr. ; confection of roses, 1 oz.).

Dose, 5 to 10 grains.

PILULA ALOES ET FERRI.—Pill of Aloes and Iron (sulphate of iron, 1½ oz. ; Barbadoes aloes, in powder, 2 oz. ; compound powder of cinnamon, 3 oz. ; confection of roses, 4 oz.).

Dose, 5 to 10 grains.

Barbadoes Aloes is also contained in Pilula Cambogiae Composita ; Pilula Colocynthidis Composita ; and Pilula Colocynthidis et Hyoscymami.

2.—Aloe Socotrana.—**SOCOTRINE ALOES.**—The INSPISATED JUICE of the leaf of one or more undetermined species of *Aloe*. Produced chiefly in Socotra, and shipped to Europe by way of Bombay.

Characters.—In reddish-brown masses, opaque, or translucent at the edges ; breaks with an irregular or smooth and resinous fracture ; has a bitter taste, and a strong, but fragrant, odour. *Dose*, 2 to 6 grains.

Officinal Preparations.—**DECOCTUM ALOES COMPOSITUM.**—Compound Decoction of Aloes (extract of socotrine aloes, 120 gr. ; myrrh, 90 gr. ; saffron, 90 gr. ; carbonate of potash, 60 gr. ; extract of liquorice, 1 oz. ; compound tincture of cardamoms, 8 fl. oz. ; distilled water, a sufficiency).

Dose, ½ to 2 fluid ounces.

ENEMA ALOES.—Enema of Aloes (socotrine aloes, 40 gr. ; carbonate of potash, 15 gr. ; mucilage of starch, 10 fl. oz.).

EXTRACTUM ALOES SOCOTRINÆ.—Extract of Socotrine

Aloes (socotrine aloes, in small fragments, 1 lb. ; boiling distilled water, 1 conq.). *Dose*, 2 to 6 grains.

Also contained in Extractum Colocynthidis Compositum.

PILULA ALOES ET ASSAFETIDA.—Pill of Aloes and Assafetida (socotrine aloes, in powder, assafetida, hard soap, confection of roses, of each, 1 oz.). *Dose*, 5 to 10 grains.

PILULA ALOES ET MYRRHÆ.—Pill of Aloes and Myrrha (socotrine aloes, 2 oz. ; myrrh, 1 oz. ; saffron, dried, $\frac{1}{2}$ oz. ; confection of roses, $2\frac{1}{2}$ oz.). *Dose*, 5 to 10 grains.

PILULA ALOES SOCOTRINÆ.—Pill of Socotrine Aloes (socotrine aloes, in powder, 2 oz. ; hard soap, in powder, 1 oz. ; volatile oil of nutmeg, 1 fl. dr. ; confection of roses, 1 oz.).

Dose, 5 to 10 grains.

TINCTURA ALOES.—Tincture of Aloes (socotrine aloes, in coarse powder, $\frac{1}{2}$ oz. ; extract of liquorice, $1\frac{1}{2}$ oz. ; proof spirit, a sufficiency). *Dose*, 1 to 2 fluid drachms.

VINUM ALOES.—Wine of Aloes (socotrine aloes, $1\frac{1}{2}$ oz. ; cardamon seeds, freed from the pericarps, and bruised, 80 gr. ; ginger, in coarse powder, 80 gr. ; sherry, 2 oct.).

Dose, 1 to 2 fluid drachms.

Socotrine Aloes is also contained in Pilula Rhei Composita, and Tinctura Benzoini Composita.

Both varieties of Aloes dissolve almost entirely in proof spirit, and during solution exhibit, under the microscope, numerous minute crystals. They both yield an active purgative principle, *Aloin* ($C_{34}H_{36}O_{14}H_2O$) ; also *Aloetic Acid*, striking olive-brown with persalts of iron. When aloes is acted upon by nitric acid, *Polychromic*, *Chrysammic*, and *Chrysolepic Acids* are formed.

Therapeutics.—Purgative, chiefly acting upon the lower part of the intestinal canal. The action of aloes is slow, and the secretions of the tube are but little increased. It is frequently emmenagogue. When small doses are given, tonic and stomachic effects are apparently induced upon the upper part of the canal. The preparations of aloes are employed in habitual constipation ; they seldom produce subsequent confinement of the bowels. They may be given in chronic dyspepsia, in combination with stomachics and tonics, and they are often used as adjuncts to other purgatives, as scammony, colocynth and rhubarb. Aloes, combined with myrrh and iron, is constantly prescribed in amenorrhœa, connected with anaemia and defective action of the pelvic organs. The drug should be avoided when there is much tendency to haemorrhoids, or when the abdominal organs are in a state of inflammation.

There is apparently but little difference between the action of Barbadoes and Socotrine aloes. Some physicians, however, consider that the extract of Barbadoes aloes is more efficacious than an equivalent quantity of the Socotrine.

Aloes frequently causes griping, especially when given alone.

2.—URGINEA SCILLA.

Scilla.—*SQUILL.*—The sliced and dried BULB of Urginea Scilla. From the Mediterranean coasts.

Characters.—Bulb pear-shaped, weighing from half a pound to ten pounds; outer scales membranous, brownish-red or white; inner scales thick, whitish, fleshy, juicy; taste mucilaginous, intensely and disagreeably bitter, somewhat acrid. The dried slices are white or yellowish-white, slightly translucent, scentless, disagreeably bitter, brittle and easily pulverizable if very dry, but, if exposed, readily recovering moisture and flexibility.

Contains an acrid resin and a very bitter principle, *Scillitin*, together with a trace of tannin and phosphate of lime. An aqueous infusion of squill is turned to deep purple by the ferric salts. *Dose, in powder*, 1 to 3 grains.

Officinal Preparations.—*ACERUM SCILLÆ.*—Vinegar of Squill (squill, bruised, $2\frac{1}{2}$ oz.; diluted acetic acid, 1 oct.; proof spirit, $1\frac{1}{2}$ fl. oz.). *Dose*, 15 to 40 minims.

OXYMEL SCILLÆ.—Oxymel of Squill (vinegar of squill, 1 oct.; clarified honey, 2 lb.). *Dose*, $\frac{1}{2}$ to 1 fluid drachm.

PILULA SCILLÆ COMPOSITA.—Compound Squill Pill (squill, in powder, $1\frac{1}{2}$ oz.; ginger, in powder, ammoniacum, in powder, hard soap, in powder, of each 1 oz.; treacle, by weight, 2 oz., or a sufficiency).

SYRUPUS SCILLÆ.—Syrup of Squill (vinegar of squill, 1 oct.; refined sugar, $2\frac{1}{2}$ lb.). *Dose*, $\frac{1}{2}$ to 1 fluid drachm.

TINCTURA SCILLÆ.—Tincture of Squill (squill, bruised, $2\frac{1}{2}$ oz.; proof spirit, 1 oct.). *Dose*, 10 to 30 minims.

Powdered squill is also contained in Pilula Ipecacuanhae cum Scilla.

Therapeutics.—In small doses squill acts as a stimulant, expectorant and diuretic; in larger doses it may produce vomiting and purging. It increases the secretion of the mucous membrane of the bronchi, and arrests the expectoration of mucus when viscid and abundant. It is contra-indicated in cases of an active inflammatory nature on account of its acrid and stimulating properties. As an expectorant, squill is often combined with ammoniacum and ipecacuanha.

• Melanthaceæ.

1.—COLCHICUM AUTUMNALE. THE MEADOW SAFFRON.

1. Colchici Cormus.—The fresh corm of *Colchicum Autumnale*; collected about the end of June; and the same, stripped of its coats, sliced transversely, and dried at a temperature not exceeding 150° Fahr.

Characters.—Fresh corm about the size of a chestnut, flattened where it has an undeveloped bud; furnished with an outer brown and an inner yellow coat; internally white, solid and fleshy; yielding, when cut, a milky acid and bitter juice. Dried slices, about a line thick, moderately indented on one, rarely on both sides, firm, flat, whitish, amylaceous.

Dose, in powder, 2 to 8 grains.

Officinal Preparations.—**EXTRACTUM COLCHICI.**—Extract of *Colchicum* (from fresh colchicum corms, deprived of their coats, 7 lb.). *Dose, $\frac{1}{2}$ grain to 2 grains.*

EXTRACTUM COLCHICI ACETICUM.—Acetic Extract of *Colchicum* (fresh colchicum corms, deprived of their coats, 7 lb.; acetic acid, 6 fl. oz.). *Dose, $\frac{1}{2}$ grain to 2 grains.*

VINUM COLCHICI.—Wine of *Colchicum* (colchicum corm, sliced, dried, and bruised, 4 oz.; sherry, 1 oct.).

Dose, 10 to 30 minims.

Colchici Semina.—**COLCHICUM SEEDS.**—The fully ripe seeds of *Colchicum Autumnale*.

Characters.—About the size of white mustard seed, very hard, and of a reddish-brown colour.

Both the seeds and the corm contain gum, starch, fatty matter, *Cevadic Acid*, and a crystalline principle, *Colchicine*. This last substance was at one time said to be identical with veratria, but it does not excite sneezing. It is turned *deep violet* by nitric acid.

Officinal Preparation.—**TINCTURA COLCHICI SEMINUM.**—Tincture of *Colchicum Seeds* (colchicum seeds, bruised, 2½ oz.; proof spirit, 1 oct.). *Dose, 10 to 30 minims.*

Therapeutics.—In medicinal doses, colchicum increases the action of some of the secreting organs; the faeces become more coloured, and the bile is apparently thrown out in larger quantities. The urine is also sometimes increased in quantity. The action of the heart is diminished, and in some persons the pulse becomes intermittent. Vomiting, purging, with intense prostration, may ensue from the exhibition of large doses.

Colchicum is regarded almost as a specific in acute attacks of gout, and it is extensively employed in all forms of this

malady. It often affords relief in rheumatism and other inflammatory affections, probably from its especial controlling power over the heart's action, rather than from any specific effect. It is employed with advantage as a cholagogue, combined with other purgatives ; and it may be often substituted for mercurials.

2.—ASAGRÆA OFFICINALIS.

Sabadilla. — *Cevadilla.* — The dried FRUIT of *Asagrea Officinalis*. Imported from Mexico.

Characters. — Fruit about half an inch long, consisting of three light-brown papyraceous follicles, each containing from one to three seeds, which are about a quarter of an inch long, blackish-brown, shining, slightly winged, possessing an intensely acrid bitter taste. Contains two acids, *Veratric* and *Cevadic*, and an active principle,

Veratria. — *VERATRIA* ($C_{22}H_{52}N_2O_8$). — An ALKALOID obtained from Cevadilla ; not quite pure. May be obtained thus : cevadilla, 2 lb. ; distilled water, rectified spirit, solution of ammonia, hydrochloric acid, of each a sufficiency ; purified animal charcoal, 60 gr.

Characters and Tests. — Pale-grey, amorphous, without smell, but, even in the most minute quantity, powerfully irritating the nostrils ; strongly and persistently bitter, and highly acrid ; insoluble in water, soluble in spirit, in ether, and in diluted acids, leaving traces of an insoluble brown resinous matter. Heated with access of air, it melts into a yellow liquid, and at length burns away, leaving no residue. An active poison. With nitric acid it forms a yellow solution, and with sulphuric acid acquires an intense red colour.

Dose. , $\frac{1}{2}$ grain to $\frac{1}{6}$ grain. Must be used with great care if given internally.

Officinal Preparation. — *UNGUENTUM VERATRÆ.* — Ointment of Veratria (veratria, 8 gr. ; prepared lard, 1 oz. ; olive oil, $\frac{1}{2}$ fl. dr.).

Therapeutics. — In contact with the nasal passages, veratria excites violent sneezing. Placed on the unbroken skin it causes a sensation of heat and pricking. Taken internally it produces diarrhoea, nausea and vomiting, and formication in the extremities ; the pulse becomes slow, weak, and at length irregular ; the temperature becomes lower, and muscular weakness, twitching, convulsions, collapse and death may ensue. Veratria exercises a peculiar action upon the heart : at first there is a transient quickening, said by Bezold to be due to stimulation of the motor ganglia ; then follows a re-

tardation, from the vagi becoming influenced. The tetanoid spasms which are immediately produced by veratria upon the voluntary muscles are not arrested by severing the connection of the muscles with the spinal cord, as is the case with the spasms resulting from poisoning by strychnia. Medicinally, veratria has been used to reduce the temperature and pulse in acute sthenic febrile affections, as lobar pneumonia and erysipelas; it has also been given in gout and rheumatism. Externally the ointment has relieved pain in neuralgia and rheumatism of various kinds.

3.—VERATRUM VIRIDE. THE GREEN HELLEBORE.

Veratri Viridis Radix.—**GREEN HELLEBORE Root.**—The dried RHIZOME of Veratrum Viride. Collected in autumn in the United States and Canada.

Characters.—Thick and fleshy, giving off numerous pale-yellow radicles, which are marked with indentations; has a peculiar acrid taste, and produces a sensation of tingling about the fauces. Contains two alkaloids, *Viridia* and *Veratroidea*, the former soluble, the latter insoluble, in ether.

Dose, in powder, 1 to 3 grains or more.

Officinal Preparation.—**TINCTURA VERATRI VIRIDIS.**—Tincture of Green Hellebore (green hellebore root, in coarse powder, 4 oz.; rectified spirit, 1 oct.). *Dose, 5 to 20 minims.*

Therapeutics.—Said to be valuable in controlling the vascular system in inflammatory diseases, and especially in gout, rheumatic fever, and allied affections. Characteristic symptoms of its action are depression and slowness of the pulse. Experiments appear to show that *Viridia* is slightly, if at all, a topical irritant; it causes neither purging nor vomiting. *Veratroidea*, however, causes both these symptoms, and has a somewhat irritant local action. Neither of the alkaloids affects the brain.

Palmaceæ.

ARECA CATECHU. THE BETEL-NUT TREE.

Areca.—**ARECA NUT.**—The SEED of Areca Catechu. Imported from the East Indies.

Characters.—The seeds resemble horse chestnuts; are rusty-grey in colour, very hard, with a tessellated surface and well-marked hilum. When split open, the albumen is seen to be ruminated; the cut surface resembles that of a nutmeg.

Contains Catechu-tannic and Gallic Acids, together with gum,

oily matter, and *Areca-red*, a reddish-brown substance, soluble in boiling water and alkaline liquids, and yielding oxalic acid when boiled with nitric acid.

Dose, in powder, 15 to 30 grains as an astringent; $\frac{1}{2}$ to $\frac{2}{3}$ ounce as an anthelmintic.

Therapeutics. — Areca nut, mixed with quick-lime and Chavica leaves, forms Betel, the masticatory of the East. It is said to render the breath fragrant, to strengthen the gums and teeth ; to act as a preservative against dysentery, and to possess certain narcotic and stimulant properties. It is certainly astringent, like kino and catechu, and may be employed as an anthelmintic to expel the tape-worm.

Smilaceæ.

SMILAX OFFICINALIS. SARSAPARILLA.

Sarsæ Radix.—JAMAICA SARSAPARILLA.—The dried root of Smilax Officinalis. Native of Central America, imported from Jamaica.

Characters.—Roots not thicker than a goose-quill, generally many feet in length, reddish-brown, covered with rootlets, and folded in bundles about eighteen inches long, scentless ; taste mucilaginous, feebly bitter, faintly acrid. Contains a volatile oil, together with a bitter crystallisable principle, *Sarsaparillin*, *Smilacin*, or *Parillinic Acid*, turning red with sulphuric acid.

Officinal Preparations.—DECOCTUM SARSÆ.—Decoction of Sarsaparilla (Jamaica sarsaparilla, cut transversely, $2\frac{1}{2}$ oz. ; boiling distilled water, $1\frac{1}{2}$ oct.). *Dose*, 2 to 10 fluid ounces.

DECOCUTUM SARSÆ COMPOSITUM.—Compound Decoction of Sarsaparilla (Jamaica sarsaparilla, cut transversely, $2\frac{1}{2}$ oz. ; sassafras root, in chips, guaiacum-wood turnings, fresh liquorice-root, bruised, of each $\frac{1}{2}$ oz. ; mezereon bark, 60 gr. ; boiling distilled water, $1\frac{1}{2}$ oct.). *Dose*, 2 to 10 fluid ounces.

EXTRACTUM SARSÆ LIQUIDUM.—Liquid Extract of Sarsaparilla (Jamaica sarsaparilla, cut transversely, 1 lb. ; distilled water, at 160° Fahr., 14 oct. ; rectified spirit, 1 fl. oz.).

Dose, 2 to 4 fluid drachms.

Therapeutics.—Supposed to be diaphoretic, diuretic, tonic, and alterative. It is largely used in the treatment of constitutional syphilis ; but as it is usually given in combination with powerful remedies, it is a question how much influence the drug itself has really exercised.

Adulterations.—Inferior kinds of sarsaparilla ; sometimes it is mixed with other substances, as Dulcamara, detected by their different structure.

Zingiberaceæ.

1.—ELETTARIA CARDAMOMUM. THE MALABAR CARDAMOM.

Cardamomum.—**CARDAMOMS.**—The dried CAPSULES of *Elettaria Cardamomum*. Cultivated in Malabar. The seeds are best kept in their pericarps, from which they should be separated when required for use, the pericarpial coats being rejected.

Characters.—Seeds obtusely angular, corrugated, reddish-brown, internally white, with a warm, aromatic, agreeable taste and odour, contained in ovate-oblong, triangular, pale-brown coriaceous ribbed pericarps. Yield a volatile oil, having the taste and odour of the seeds, and consisting of a liquid portion and a crystalline camphor isomeric with turpentine camphor ($C_{10}H_{16}, 3H_2O$). They also contain a fixed oil and an acrid resin. *Dose, in powder*, 5 to 20 grains.

Officinal Preparation.—**TINCTURA CARDAMOMI COMPOSITA.**—Compound Tincture of Cardamoms (cardamom seeds, freed from the pericarps and bruised, $\frac{1}{2}$ oz. ; caraway fruit, bruised, $\frac{1}{2}$ oz. ; raisins, freed from their seeds, 2 oz. ; cinnamon bark, bruised, $\frac{1}{2}$ oz. ; cochineal, in powder, 60 gr. ; proof spirit, 1 oct.). *Dose*, $\frac{1}{2}$ to 2 fluid drachms.

Contained in Decoctum Aloes Compositum, Mistura Ferri Aromatica, Mistura Sennæ Composita, and Tinctura Chloroformi Composita.

Cardamom is also contained in Extractum Colocynthidis Compositum, Pulvis Cinnamomi Compositus, Pulvis Crete Aromaticus, Tinctura Gentianæ Composita, Tinctura Rhei, and Vinum Aloes.

Therapeutics.—An agreeable aromatic stimulant, stomachic and carminative ; used as a condiment in the East. It is chiefly given as an adjunct to purgatives and other medicines, to prevent griping.

2.—CURCUMA LONGA. TURMERIC.

Curcuma.—**TURMERIC.**—The RHIZOME of *Curcuma Longa*.

Characters.—In short pieces, externally yellow, internally deep orange, having a peculiar odour. Contains a yellow colouring principle, *Curcumin*, turned deep reddish-brown by alkalies, but unaltered in tint by any acids except boracic acid.

Officinal Preparations.—**TURMERIC PAPER.**—Unsized white paper steeped in turmeric and dried by exposure to the air.

TURMERIC TINCTURE.—(Turmeric, bruised, 1 oz. ; rectified spirit, 6 fl. oz.).

Uses.—Not used as a remedy ; is taken as a condiment in the form of curry powder, of which it is an ingredient. It is introduced into the British Pharmacopœia as a test for alkaline solutions, in contact with which its colour is changed to reddish-brown.

3.—ZINGIBER OFFICINALE. THE GINGER.

Zingiber.—**GINGER.**—The scraped and dried RHIZOME of Zingiber Officinale. From plants cultivated in the West Indies, India and other countries.

Characters.—Irregular lobed, decorticated pieces, three or four inches long, sub-compressed, yellowish-white, but not chalky on the surface, with a short mealy fracture, hot taste, and agreeable aroma. Powder yellowish-white.

Contains a volatile oil (C_5H_8), upon which its pungency depends, resinous matters and a large quantity of starch.

Dose, in powder, 10 to 20 grains and upwards.

Officinal Preparations.—**SYRUPUS ZINGIBERIS.**—Syrup of Ginger (strong tincture of ginger, 6 fl. dr. ; syrup, 19 fl. oz.).

Dose, 1 fluid drachm.

TINCTURA ZINGIBERIS.—Tincture of Ginger (ginger, in coarse powder, 2½ oz. ; rectified spirit, 1 oct.).

Dose, 15 minimis to 1 fluid drachm.

TINCTURA ZINGIBERIS FORTIOR.—Strong Tincture of Ginger (ginger, in fine powder, 10 oz. ; rectified spirit, a sufficiency).

Dose, 5 to 20 minimis.

Ginger forms an ingredient of many other officinal preparations.

Therapeutics.—An aromatic stimulant and carminative. Taken internally, produces an agreeable sensation of warmth at the epigastrum ; it appears to assist digestion by giving a healthy tone to the stomach. Ginger is employed in dyspepsia, especially when accompanied by much flatulence, and as an adjunct to purgatives to prevent griping. It acts as a sialagogue when chewed, and may be used in relaxation of the tonsils and uvula.

CLASS III. ACOTYLEDONES.

Lichenes.

1.—CETRARIA ISLANDICA.

Cetraria.—**ICELAND MOSS.**—The entire LICHEN Cetraria Islandica. Native of the North of Europe.

Characters.—Foliaceous, lobed, crisp, cartilaginous, brownish-white, paler beneath; taste bitter and mucilaginous. A strong decoction gelatinises on cooling; the gelatinous matter is termed *Lichenin* or *Lichen-Starch* ($C_{12}H_{20}O_10$).

Cetraria also contains *Licheno-Stearic Acid* ($C_{14}H_{24}O_3$), *Fumaric Acid*, a little sugar, and a bitter crystallisable principle, *Cetraric Acid* ($C_{18}H_{16}O_8$).

Officinal Preparations.—**DECOCTUM CETRARIE.**—Decoction of Iceland Moss (Iceland moss, 1 oz.; distilled water, 1 oct.).

Dose. 1 to 2 fluid ounces.

Therapeutics.—The decoction is demulcent and slightly tonic.

2.—ROCELLA TINCTORIA (?).

Laemus.—**LITMUS.**—A blue pigment prepared from various species of Roccella; occurs in small cakes, made up of a granular powder. The lichen is macerated for some time in water rendered alkaline by potash and lime, and mixed with urine; fermentation takes place, the mass becoming red and then blue; it is then removed, and reduced by sand and lime, etc., to a proper consistence. Has an odour of violets.

The blue colouring matter is due to *Orcein* ($C_7H_4NO_3$).

Officinal Preparations.—**TINCTURE OF LITMUS.**—(Litmus, in powder, 1 oz.; proof spirit, 10 fl. oz.). Diluted with water, it may be used as a test for the presence of acids.

BLUE LITMUS PAPER.—Unsized white paper steeped in tincture of litmus and dried by exposure to the air. Used as a test for acids, or any acid liquid, by which the blue colour is changed to red.

RED LITMUS PAPER.—Unsized white paper steeped in tincture of litmus which has been previously reddened by the addition of a very minute quantity of sulphuric acid and dried by exposure to the air.

Red Litmus Paper indicates the presence of any substance having an alkaline reaction, which restores to the paper its original blue colour.

Filices.

ASPIDIUM FILIX MAS. THE MALE FERN.

Filix Mas.—**MALE FERN.**—The dried RHIZOME, with the bases of the foot-stalks and portions of the root fibres of *Aspidium Filix Mas*. Collected in summer.

Characters.—Tufted, scaly, greenish-brown; powder greenish-yellow, with a disagreeable odour, and a nauseous bitter, somewhat astringent taste.

Contains tannin, starch, a resin, a volatile oil, and a fixed green oil.

Ether dissolves the active principle, and the ethereal extract deposits a crystalline colourless substance, *Filicic Acid*. The green liquid portion contains *Glyceride of Filixolyn*, yielding, by saponification, *Filomylic* and *Filoxylc Acids*.

Dose, in powder, 60 to 180 grains.

Officinal Preparation.—**EXTRACTUM FILICIS LIQUIDUM**.—Liquid Extract of Male Fern (male fern, in coarse powder, 2 lb.; ether, 4 oct., or a sufficiency). *Dose*, 15 to 30 minima.

Therapeutics.—Used as an anthelmintic, especially in the treatment of the tape-worm. It acts apparently by destroying the worm, and thus assisting its expulsion. It should be given during fasting, and followed after an interval by a mild purgative. The liquid extract is perhaps the most valuable anthelmintic known.

A N I M A L K I N G D O M .**CLASS. MAMMALIA.**

Cetacea.

PHYSETER MACROCEPHALUS. THE SPERM WHALE.

Cetaceum.—**SPERMACETI**.—Nearly pure Cetine, mixed with oil, from the head of *Physeter Macrocephalus*, inhabiting the Pacific and Indian Oceans. It is separated from the oil by filtration and pressure, and afterwards purified.

Characters and Tests.—Crystalline, pearly-white, glistening, translucent, with little taste or odour, reducible to powder by the addition of a little rectified spirit. Scarcely unctuous to the touch; does not melt under 100° Fahr.

Cetine, or *Palmitate of Cetyl* ($C_{16}H_{33}, C_{16}H_{31}O_2$), yields, when saponified, *Hydrate of Cetyl*, or *Ethal* ($C_{16}H_{33}HO$).

Officinal Preparation. — UNGUENTUM CETACEI.—Ointment of Spermaceti (spermaceti, 5 oz. ; white wax, 2 oz. ; almond oil, 1 oct., or a sufficiency).

Spermaceti is also used in the preparation of Charta Episistica.

Therapeutics.—An emollient application.

Pachydermata.

SUS SCROFA. THE HOG.

Adeps Præparatus.—PREPARED LARD.—The purified FAT of Sus Scrofa (the internal fat of the abdomen of the hog, perfectly fresh, 14 lb.).

The lard is purified by removing the peritoneum, thoroughly washing the broken-up masses of fat with a stream of running water, to dissolve and carry away any soluble matters, then straining and liquefying at a heat not exceeding 212° Fahr., in order to avoid decomposition, and again straining through flannel.

Characters and Tests.—A soft, white, fatty substance, melting at about 100° Fahr. Has no rancid odour; dissolves entirely in ether. Consists of a mixture of Stearin and Olein.

Officinal Preparations.—UNGUENTUM SIMPLEX.—Simple Ointment (white wax, 2 oz. ; prepared lard, 3 oz. ; almond oil, 3 fl. oz.). Lard is also used for preparing other unguenta.

Adeps Benzoatus.—BENZOATED LARD.—(Prepared lard, 1 lb. ; benzoin, reduced to coarse powder, 160 gr.). Contained in Suppositoria: Acidi Tannici ; Hydrargyri ; Morphiæ ; Plumbi Composita ; and Unguenta : Gallæ ; Plumbi Acetatis ; Sulphuris and Zinci.

Therapeutics.—Emollient; sometimes added to poultices to prevent them becoming hard and dry.

Rodentia.

CASTOR FIBER. THE BEAVER.

Castoreum.—CASTOR.—The dried PREPUTIAL FOLLICLES and their SECRETION, obtained from Castor Fiber, and separated from the somewhat shorter and smaller oil-sacs which are frequently attached to them. From the Hudson's Bay Territory.

Characters.—Follicles in pairs, about three inches long, fig-shaped, firm, and heavy, brown or greyish-black; containing a dry, resinous reddish-brown or brown highly odorous secretion, *Castorine*, in great part soluble in rectified spirit, and in ether.

Castor also contains a volatile oil, *Uric, Phosphoric* and *Benzoic Acids*, combined with potash, lime, and soda; also carbonate of ammonia, *Carbolic Acid* and *Salicine*.

Dose, 5 to 10 grains.

Officinal Preparation.—*TINCTURA CASTORI*.—Tincture of Castor (castor, in coarse powder, 1 oz.; rectified spirit, 1 oct.).

Dose, $\frac{1}{2}$ to 1 fluid drachm.

Therapeutics.—Stimulant and antispasmodic; used in epilepsy and hysteria, and to rouse the system in cases of an adynamic type, as in typhoid pneumonia.

Ruminantia.

1.—BOS TAURUS. THE OX.

Fel Bovinum Purificatum.—*PURIFIED OX BILE*.—The purified *GALL* of *Bos Taurus* (fresh ox bile, 1 oct.; rectified spirit, 2 oct.). The bile and spirit are mixed by agitation in a bottle, and set aside until the sediment subsides. The clear solution is decanted, and evaporated in a porcelain dish by the heat of a water bath until it acquires a suitable consistence for forming pills.

Characters and Tests.—A yellowish-green substance, having a taste partly sweet and partly bitter; soluble in water and in spirit. A solution of one or two grains of it in about a fluid drachm of water, when treated, first with a drop of freshly made syrup consisting of one part of sugar and four of water, and then with sulphuric acid cautiously added until the precipitate at first formed is redissolved, gradually acquires a cherry-red colour, which changes in succession to carmine, purple, and violet.

This change of colour is produced by the liberation of cholic acid.

Bile consists chiefly of a fatty crystalline substance, *Cholesterine* ($C_{28}H_{44}O$), a base, *Choline*, and two peculiar acids, *Glycocholic* ($C_{28}H_{43}NO_6$), and *Taurocholic Acids* ($C_{28}H_{45}NSO_7$).

The principal colouring matter of the bile is *Bilirubin* ($C_{16}H_{18}N_2O_3$); by oxidation this substance yields *Biliverdin* ($C_{16}H_{20}N_2O_5$); a third pigment has been described, viz., *Bilifuscin* ($C_{10}H_{20}N_2O_4$).

The presence of these pigments may be shown by the addition of nitric acid, or some other oxidising agent, as tincture of iodine; bilirubin is then transformed to biliverdin, exhibiting a green colour, which eventually passes through blue, violet, red, and lastly yellow.

Dose, 5 to 10 grains or more, given in small gelatine capsules or formed into pills.

Therapeutics. — In ordinary medicinal doses dried bile appears to act as a slight laxative to the alimentary canal. It is said to be cholagogue, and is given in dyspepsia, especially when vomiting occurs after food. Its value as a remedy demands further investigation.

Lac.—**MILK.**—The fresh milk of the cow, *Bos Taurus*. Consists of caseine, fat or butter, milk-sugar, various salts (chiefly phosphates and chlorides), and water. About 12 per cent of solid matter, and at least 10 per cent of cream, should be afforded by good milk.

Casein is the nitrogenous constituent, and from it milk derives its chief nutritive property. This substance is coagulated by acetic acid, forming "Curds;" a similar effect is produced by other acids and rennet. "Whey" is the residue of milk from which the cream has been removed by standing, and the caseine by coagulation. Milk is used in the preparation of *Mistura Scammonii*.

Lactis Saccharum.—**SUGAR OF MILK,** $C_{12}H_{24}O_{12}$.—A CRYSTALLISED SUGAR (Lactose) obtained from the whey of milk by evaporation.

Characters.—Usually in cylindrical masses, two inches in diameter, with a cord or stick in the axis, or in fragments of cakes; greyish-white, crystalline on the surface, and in its texture, translucent, hard, scentless, faintly sweet, gritty when chewed. Slowly soluble in 6 parts of cold water, only slightly soluble in alcohol, and insoluble in ether. When boiled with diluted acid, grape-sugar yields *Galactose*; if left for some time in contact with yeast, it undergoes alcoholic fermentation; it also reduces cuprous oxide from an alkaline solution. Used in making *Pulvis Elaterii Compositus*.

Dose, ad libitum.

Therapeutics.—May be used for rubbing up powerful medicinal powders, as calomel, bismuth, hydrochlorate of morphia, etc. Milk-sugar, added to cow's milk, diluted with water, may be used as a substitute for the milk of the human female. It is less irritating to the mucous membranes than cane sugar, and might on that account be advantageously substituted for that last-named substance in the diet of infants.

2.—MOSCHUS MOSCHIFERUS. THE MUSK DEER.

Moschus.—**MUSK.**—The inspissated and dried SECRETION from the PREPUTIAL FOLLICLES of *Moschus Moschiferus*; native of the mountainous regions of Central Asia. Imported from China and India.

Characters.—In irregular, reddish-black, rather unctuous grains; having a strong, peculiar, very diffusible odour, and a bitter aromatic taste; contained in a round or slightly oval membranous sac, about two inches in diameter, covered on the outer side with stiff greyish hairs, arranged in a concentric manner around its central orifice. The peculiar odorous principle has not yet been isolated. *Dose*, 5 to 10 grains.

Therapeutics.—Stimulant and antispasmodic; it resembles castoreum in its action, and is suitable for the same class of cases.

Adulteration.—The drug is very high in price. The sac in which the musk is contained is consequently often emptied and filled with a mixture of dried blood, with more or less of true musk, and the sac carefully closed again. Sacs are sometimes made from the skin or scrotum of the animal, and filled with a mixture of sand, musk and dried blood.

3.—PEPSINA.

Pepsina.—**PEPSINE.**—A preparation of the mucous lining of a fresh and healthy stomach of the pig, sheep, or calf.

Characters and Tests.—A light yellowish-brown powder, having a faint, but not disagreeable, odour, and a slightly saline taste, without any indication of putrescence; very little soluble in water or spirit. Two grains of it with an ounce of distilled water, to which five minimis of hydrochloric acid have been added, form a mixture in which 100 grains of hard-boiled white of egg, in thin shavings, will dissolve on their being digested together for about four hours at a temperature of 98° Fahr. *Dose*, 2 to 5 grains.

Therapeutics.—Stated to be a valuable remedy in dyspepsia. Has proved more efficacious when combined with diluted hydrochloric acid, since in the presence of peptones its action is reduced, and is renewed by adding more diluted acid. In combination with iron, pepsin may expedite recovery in cases of extreme anaemia, where the functions of the stomach have become deranged. Pepsin, with diluted acid, has been successfully employed in the treatment of spasmodic asthma.

Pepsin would appear to be especially serviceable in old persons who suffer from vomiting or regurgitations after each meal, and in whom the distressing symptoms apparently arise from simple debility of the stomach.

A few grains of the substance may be mixed with the food.

4.—OVIS ARIES. THE SHEEP.

Sevum Præparatum.—**PREPARED SUET.**—The INTERNAL FAT of the abdomen of *Ovis Aries*, purified by melting and straining.

Characters.—White, smooth, almost scentless; fusible at 103° Fahr. Composed almost exclusively of *Stearin*, with a little *Olein* and *Palmitin*. Used in preparing *Emplastrum Cantharidis* and *Unguentum Hydrargyri*.

Therapeutics.—Emollient, and used in preparing ointments and plasters; occasionally added to poultices.

CLASS. AVES (BIRDS).

Rasores (Gallinæ).

GALLUS BANCKIVA (DOMESTICUS). THE COMMON FOWL.

Ovi Albumen.—**Egg ALBUMEN.**—The LIQUID WHITE of the egg of *Gallus Banckiva*.

Characters.—Coagulated by ether, corrosive sublimate, and other metallic salts, by nitric, sulphuric, tannic, and hydrochloric acids, and by a temperature above 180° Fahr.; not precipitated by acetic acid, as is the case with caseine.

Ovi Vitellus.—**YOLK OF EGG.**—The YOLK of the egg of *Gallus Banckiva*.

Characters.—Consists of an albuminous principle, *Vitellin*, with olein, margarine, cholesterine, salts of lime, iron, and a yellow oil containing phosphoric acid. Used in preparing *Spiritus Vini Gallici*.

Therapeutics.—Used as an antidote in corrosive sublimate and sulphate of copper poisoning, forming in each case an inert albuminate of the metal. By dissolving alum in white of egg an astringent application may be formed. The albumen coagulates and is applied locally in this form. The yolk forms a nutritious light article of diet, and is useful in the form of egg-flip in cases of exhaustion, when solid food cannot be taken.

CLASS. PISCES (FISHES).

Teleostei (Anacanthini).

1.—ACIPENSER. THE STURGEON.

Isinglass.—**ISINGLASS.**—The SWIMMING BLADDER or sound of various species of *Acipenser*, prepared, cut into fine shreds and dried.

Characters.—A gelatinous tissue, which, when boiled, yields gelatine, a substance soluble in hot water, and forming a jelly on cooling ; precipitated by tannic acid, but not by gallic acid. Tanno-gelatine forms the basis of leather, and is produced by the union of tannic acid with gelatine.

Officinal Preparation.—**SOLUTION OF GELATINE.**—(Isinglass, in shreds, 50 gr. ; warm distilled water, 5 fl. oz.). Used to distinguish tannic from gallic acid, and to detect tannic acid in *Decoctum Ulmi*, with which it should give a precipitate.

2.—GADUS MORRHUA. THE COD.

Oleum Morrhuae.—**COD-LIVER OIL.**—The oil extracted from the fresh liver of *Gadus Morrhua* by the application of a heat not exceeding 180° Fahr.

Characters and Tests.—Pale-yellow, with a slight fishy odour, and bland fishy taste. A drop of sulphuric acid added to a few drops of the oil on a porcelain slab develops a violet colour, which soon passes to a yellowish or brownish-red. This test shows that the oil is obtained from the liver, but does not prove that it came from the codfish, since any liver-oil would give the same reaction, in consequence of the contained bile.

Contains glycerine, oleic, margaric, butyric and acetic acids, with a substance termed *Gaduin*; some quantities of iodine, with traces of bromine, chlorine, phosphorus, and salts are also present. *Dose*, 1 to 8 fluid drachms.

Therapeutics.—The exact manner in which cod-liver oil acts is as yet undetermined. Patients who have become emaciated from any cause, and whose blood is impoverished, frequently put on flesh under its exhibition ; in some cases it appears to improve the richness of the blood. It often increases the weight, the increase exceeding many times the quantity of oil consumed. It has proved very serviceable in the treatment of phthisis, scrofula, and low forms of rheumatic and other inflammation. It is probable that it merely acts as an oil, but is superior to other oils on account of its more ready assimilation. Cod-liver oil is largely used in the treatment of phthisis and scrofula, in chronic rheumatism and neuralgia, in chronic skin diseases, and in cachectic conditions generally. It is sometimes rubbed into the surface with the idea of obtaining its constitutional effects.

CLASS. INSECTA.

Coleoptera.

CANTHARIS VESICATORIA. THE SPANISH FLY.

Cantharis. — *CANTHARIDES.* — *Cantharis Vesicatoria.* The BEETLE, dried ; collected chiefly in Hungary.

Characters and Tests.—From eight to ten lines long, furnished with two wing-covers (elytræ) of a shining metallic-green colour, under which are two membranous transparent wings ; odour strong and disagreeable ; powder greyish-brown, containing shining green particles. Free from mites. The insects swarm upon trees about May and June, and are collected by shaking the branches and catching them in sheets. They are then thrown into boiling vinegar and afterwards dried. Contain fatty principles and oil, yellow and green colouring matters, and an active principle, *Cantharidine*.

Officinal Preparations. — *ACETUM CANTHARIDIS.* — Vinegar of Cantharides (cantharides, in powder, 2 oz. ; glacial acetic acid, 2 fl. oz. ; acetic acid, 18 fl. oz., or a sufficiency).

CHARTA EPISPASTICA. — Blistering Paper (white wax, 4 oz. ; spermaceti, 1½ oz. ; olive oil, 2 fl. oz. ; resin, ¼ oz. ; canada balsam, ½ oz. ; cantharides, in powder, 1 oz. ; distilled water, 6 fl. oz.).

EMPLASTRUM CALEFACIENS. — Warm Plaster (cantharides, in coarse powder, expressed oil of nutmeg, yellow wax, resin, of each 4 oz. ; soap plaster, 3½ lb. ; resin plaster, 2 lb. ; boiling water, 1 oct.).

EMPLASTRUM CANTHARIDIS. — Cantharides Plaster (cantharides, in powder, 12 oz. ; yellow wax, 7½ oz. ; prepared suet, 7½ oz. ; prepared lard, 6 oz. ; resin, 3 oz.).

LIQUOR EPISPASTICUS. — Blistering Liquid (cantharides, in powder, 8 oz. ; acetic acid, 4 fl. oz. ; ether, a sufficiency).

TINCTURA CANTHARIDIS. — Tincture of Cantharides (cantharides, in coarse powder, ½ oz. ; proof spirit, 1 oct.).

Dose, 5 to 20 minims.

UNGUENTUM CANTHARIDIS. — Ointment of Cantharides (cantharides, 1 oz. ; yellow wax, 1 oz. ; olive oil, 6 fl. oz.).

Therapeutics. — Externally applied, a rubefacient and irritant : if the preparation be strong, producing vesication ; the active principle sometimes becomes absorbed, and symptoms resulting from its internal administration ensue. Internally, in medicinal doses, the first symptom is diuresis, and the urine, upon examination, shows a trace of albumen ; under the microscope a few blood discs may appear ; further effects are

strangury and haematuria, priapism, sometimes aphrodisiac effects, diminution and suppression of urine, and finally convulsions and death. The drug is supposed to influence the spinal cord. Externally the preparations of cantharides are more generally employed than any other vesicating agents. They are applied in pleurisy, pneumonia, pericarditis, and other internal inflammations, after the subsidence of the more urgent febrile symptoms ; also to painful and diseased joints. Vesication is employed in congestion of the head ; and over non-inflammatory painful parts, as in neuralgic affections ; finally, in diseased conditions of the skin itself. Internally, the tincture may be given in affections of the spinal cord, as in chronic forms of paraplegia, and incontinence of urine from atony of the bladder ; also in hydrocephalus and non-inflammatory forms of albuminuria ; in skin affections, especially the squamæ : it has been occasionally employed in gleet and other mucous discharges.

Conditions in which the preparations of Cantharides must be omitted or used with caution.

1. Acute inflammation of the kidneys, since the cantharidine may become absorbed.
2. In young and very weak subjects vesication may be followed by sloughing, and prove dangerous.
3. In children, even when healthy, much caution must be observed in employing cantharides liniments to large surfaces ; severe haematuria has resulted, and lasted for several days, from the application of the Liquor Epispasticus to the scalp in the treatment of ringworm.

Adulterations.—The “Golden Beetle” has been mixed with cantharides ; and to increase the weight, artificial glass beads or tubes, coloured in imitation of the fly, have been added.

Hemiptera.

COCCUS CACTI. THE FEMALE COCHINEAL INSECT.

Coccus.—*COCHINEAL.*—The dried female insect, *Coccus Cacti*. Reared in Mexico and Teneriffe.

Characters.—Ovate, plano-convex, about two lines long, wrinkled, black or greyish-white ; yields, when crushed, a puce-coloured powder. The greyish-white insect quickly becomes black when warmed before the fire. The colouring matter is due to *Carmine* or *Carminic acid* ($C_{14}H_{14}O_8$), which occurs as small purple-red grains, insoluble in ether, but soluble in water and in alcohol.

Officinal Preparation. — TINCTURA Coccii. — Tincture of Cochineal (cochineal, in powder, 2½ oz. ; proof spirit, 1 oct.).
Dose., 30 minims to 1½ fluid drachms.

Cochineal, in powder, is also contained in Tinctura Cardamomi Composita and Tinctura Cinchona Composita.

Therapeutics. — Formerly much esteemed in the treatment of whooping cough. It is chiefly employed as a colouring agent, and is much used in the arts as a dye.

Adulterations. — Inferior cochineal is sometimes covered with bone-black to give it a black colour ; at other times it is covered with some white powder, as talc, carbonate of lead, or sulphate of baryta, in order to resemble the finer variety.

Hymenoptera.

APIS MELLIFICA. THE HIVE BEE.

Cera Alba. — WHITE WAX. — Yellow Wax, bleached by exposure to moisture, air, and light.

Characters. — Hard, nearly white, translucent. Not unctuous to the touch ; does not melt under 150° Fahr.

Officinal Preparation. — UNGUENTUM SIMPLEX. — Simple Ointment (white wax, 2 oz. ; prepared lard, 3 oz. ; almond oil, 3 fl. oz.).

White wax is also contained in Charta Epispastica ; Suppositoria : Acidi Tannici ; Hydrargyri ; Morphiæ ; Plumbi Composita ; and in Unguenta : Cetacei ; and Plumbi Subacetatis Compositum.

Cera Flava. — YELLOW WAX. — The prepared HONEY-COMB of Apis Mellifica.

Characters. — Firm, breaking with a granular fracture, yellowish, having an agreeable honey-like odour. Not unctuous to the touch ; does not melt under 140° Fahr. Entirely soluble in oil of turpentine.

Yellow wax is contained in Emplastra : Calefaciens ; Cantharidis ; Cerati Saponis ; Galbani ; Picis ; and in Unguenta : Cantharidis ; Hydrargyri Compositum ; Hydrargyri Oxidi Rubri ; Picis Liquidæ ; Resinæ ; Sabinæ ; Terebinthinæ.

Bees' Wax consists of Cerotin or Cerotic Acid ($\text{HC}_{27}\text{H}_{55}\text{O}_2$), soluble in boiling alcohol, Myricin or Palmitate of Melissyl ($\text{C}_{30}\text{H}_{51}, 2\text{C}_{16}\text{H}_{31}\text{O}_2$), insoluble in boiling alcohol, but deposited on cooling ; and Cerolein, a substance to which the tenacity, odour, and colour of the wax are due.

Mel. — HONEY. — A SACCHARINE CONCRETION deposited in the honey-comb by Apis Mellifica.

Characters and Tests. — When recently separated from the honey-comb, it is a viscid translucent liquid, of a brownish-

yellow colour, which gradually becomes partially crystalline and opaque. It has a peculiar heavy odour, and a very sweet taste. Should contain no starch. Consists of three kinds of sugar, viz., Sucrose, Glucose, and Levulose, mixed with odorous, colouring, gummy, and waxy matters and water.

Dose, ad libitum.

Officinal Preparations.—**MEL DEPURATUM**.—Clarified Honey (honey, 5 lb., melted in a water-bath, and strained while hot through flannel, previously moistened with warm water).

Contained in Confectiones : *Piperis* ; *Scammonii* ; *Terebinthinae*, and in

MEL BORACIS.—(Borax, in fine powder, 64 gr. ; clarified honey, 1 oz.).

OXYMEL.—Oxymel (clarified honey, 40 oz. ; acetic acid, 5 fl. oz. ; distilled water, 5 fl. oz.).

Dose, 1 to 2 fluid drachms.

Contained also in *Oxymel Scillæ*.

Therapeutics.—Much the same as sugar in its action, but more laxative ; usually employed as a vehicle for other medicines.

CLASS. ANNELIDA.

Hirudinea.

1.—**SANGUISUGA MEDICINALIS. THE SPECKLED LEECH.**

2.—**SANGUISUGA OFFICINALIS. THE GREEN LEECH.**

Hirudo.—**THE LEECH.**—Leeches are collected in Spain, France, Italy, and Hungary.

Characters.—Body elongated, two or three inches long, tapering to each end, plano-convex, wrinkled transversely ; back olive-green, with six rusty-red longitudinal stripes.

The belly of the Speckled Leech is of a greenish-yellow colour, spotted with black ; that of the Green Leech is olive-green, and not spotted.

Therapeutics.—Used for the local abstraction of blood when cupping is not considered advisable. A leech usually draws about one fluid drachm of blood. Care must be taken to prevent leeches entering the mouth, rectum, or uterus. Should a leech pass into the stomach, a dangerous result may be averted by injections of salt and water. Bleeding from leech bites may be arrested by pressure, by matico, or by the application of caustic or collodion. A suture is sometimes required.

FINIS OF PART II.

A D D E N D A.

* HUMULUS LUPULUS.

*Extractum Lupuli.**Infusum Lupuli.**Tinctura Lupuli.*

Nat. Ord. + LOBELIACEÆ.

LOBELIA.

*Tinctura Lobeliae.**" " Etherea.*

Therapeutics of GUM ACACIA (page 55).—A simple demulcent, used to relieve irritation of the mucous membranes, as of the fauces, pharynx, stomach, bladder and urethra ; it is also much employed for suspending some metallic powders, as oxide of zinc and subnitrate of bismuth, when administered in a liquid form.

Therapeutics of Kousso (page 59).—An anthelmintic, but it is doubtful whether it is superior to other remedies of the same class. Its cathartic power is very slight. It appears to destroy the worm, but requires a subsequent purgative to expel it. It is chiefly employed when the presence of the tapeworm is suspected. It frequently causes nausea and even vomiting.

Therapeutics of the CHERRY LAUREL (page 59).—The same as of diluted hydrocyanic or prussic acid.† The strength of the cherry laurel water (*Aqua Laurocerasi*) is very variable, and on this account its use is objectionable ; some physicians consider it an elegant method of administering hydrocyanic acid.

Urine which has been coloured *yellow* by the internal administration of Santonin (page 85), is changed to a *bright crimson* on the addition of liquor potassæ.

* This substance belongs to the Nat. Ord. Cannabinaceæ, and should immediately follow Cannabis Indica (page xiii).

† This Natural Order should immediately precede the order Loganiaceæ (page xi).

‡ Part I.

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